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Vol XL JULY, 1930 No. 7

THE LARYNGOSCOPE

AN INTERNATIONAL MONTHLY JOURNAL
DEVOTED TO DISEASES OF THE

EAR - NOSE - THROAT

FOUNDED IN 1896 BY

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Managing Editor and Publisher.

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For Contents See Page 1.

Subscription, $6.00 per Annum, in Advance.

Foreign Subscription, 35 Shillings per Annum, Post Free.
Single Copies, 75 cents.

PUBLISHED BY THE LARYNGOSCOPE CO.

3858 Westminster Place, St. Louis, Mo., U. S. A.

FOREIGN OFFICE, BAILLIERE, TINDALL & COX.

8 HENRIETTA ST., STRAND, LONDON, ENG.

[Entered at the Postoffice at St. Louis, Mo., as Second Class Matter, in July, 1896.]

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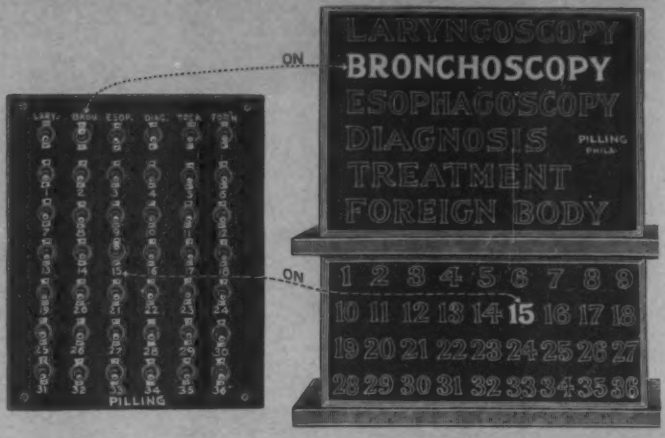
BRONCHOSCOPIC OPERATION ANNUNCIATOR, ELECTRICALLY LIGHTED



This annunciator was designed by Dr. Chevalier Jackson for Bronchoscopic Clinic of Temple University Hospital, Philadelphia.

It is used in operating rooms to indicate visually, to assembled visitors or students, the character of the operative procedure being presented. Avoids uncertainty and necessity for oral announcements. A blackboard is hard to read in a darkened room.

Consists of a gang of switches, the necessary electrical connections and the announcement board itself. On the switchboard, the first or horizontal row of switches is marked to indicate the character of the procedure—bronchoscopy, laryngoscopy, etc. The switches below are numbered consecutively to indicate the case number. This switchboard is located convenient to the nurse.

The announcement board consists of the names of the procedures—laryngoscopy, bronchoscopy, etc., and a series of numbers, 1 to 36 inclusive, on a glass plate, and is located at a convenient place, easy to read by the visitors and students. By means of lamps arranged at the back, each of the names and each of the numbers may be independently transilluminated by operating the corresponding switch.

Example: When the nurse brings in Case No. 15 on which a bronchoscopy is to be performed, she operates the switch on the upper row, marked "BRONCHOSCOPY" and the switch designated "15." The word, BRONCHOSCOPY and the figure 15, will then be sharply transilluminated on the announcement board, as shown on above illustration. The number 15 refers to a numbered list of cases on the blackboard; but any visitor will know what is going on even if he cannot read the blackboard. Price on application.

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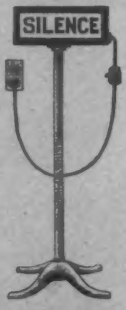

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THE

LARYNGOSCOPE.

VOL. XL JULY, 1930. No. 7

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

RELATIONS OF SINUS DISEASE TO VASOMOTOR DISTURBANCES.*

DR. LEE M. HURD, New York.

The belief that chronic nasal sinusitis is due to bacterial infection, poor drainage and aeration, should be modified. Bacterial infection is always the final process. Primarily the mucous membrane is deranged by one of three factors, namely: *1.* Deficiency in vitamins; *2.* allergia; *3.* endocrine imbalance. All of these are comparatively new developments in medicine, and it may be discovered on further research that deficient vitamins cause a proneness to allergic and endocrine conditions, or that allergia and endocrines have some relation to each other.

Vasomotor sinusitis is caused by one, or a combination of the following substances: *1.* Products of animals, such as dander, hair, feathers, etc. *2.* Food. *3.* Intestinal by-products. *4.* Physical agents; cold, heat and light. *5.* Disturbance of the endocrines. *6.* Drugs. *7.* Dusts. *8.* Pollens. The more frequent ones are the physical agents, foods, intestinal by-products and endocrine imbalance. I do not believe that pollens, in our climate, produce chronic sinusitis.

The typical symptoms are increased nasal discharge, serous at first and then changing to mucoid or mucopus, more frequently mucoid than purulent, and sneezing, with a history of what is termed

*Read before the New York Academy of Medicine, Section on Laryngology, and Rhinology, Dec. 20, 1929.

Editor's Note: This ms. received in Laryngoscope Office and accepted for publication March 14, 1930.

frequent colds or nasal obstruction. The patient may have headache, cough with expectoration, and sometimes asthma, and those in whom the condition is of long duration have a history of innumerable operations on tonsils, septum, antra and ethmoids. Many give a history of hay fever, and protein tests are positive in some and negative in others, and therefore not reliable. Intradermal tests with a suspension of the patient's own nasal bacteria are always positive for one or more organisms. This may be the dividing line between vasomotor rhinitis and vasomotor sinusitis.

Whatever the sensitization producing the vasomotor rhinitis may be, outside the nose, the patient only acquires sinus changes when he is infected with an organism to which he is sensitive or becomes sensitized.

The nasal membrane is pale, usually but not necessarily, there is swelling of the inferior turbinates, the membrane in the ethmoid area is thickened, pale, and with some mucoid secretion which may later become mucopurulent. This is commonly termed polypoid ethmoiditis, and the involvement is always bilateral.

The antra may show nothing on lavage, or there may be mucus or mucopus. They transilluminate clear, dim, or dark, depending on the amount of thickening of the membrane, but on the X-ray films there is almost always found a thickening of the membrane. This may also be present in the frontal sinuses and sphenoids.

The course is long, and the prognosis as to cure doubtful, unless the patient can be relieved of the bacteria to which he is sensitized, as well as any other agents to which he is sensitized.

Treatment: Desensitize the patient if possible. Vaccines would be ideal, but unfortunately they are rarely effective. Surgery, yes, but it must not be half-hearted. It is necessary to completely exenterate the mucosa of the sinuses involved to obtain a satisfactory result, but many patients get symptomatic relief if the ethmoids are completely exenterated, and good drainage of the other sinuses established. But if the other sinuses are completely blocked up with thickened membrane, they also will have to be cleaned out.

SUMMARY OF CASES.

Male, aet. 7. Symptoms: Difficult nasal breathing asthma. Physical findings: Highly sensitive to egg. Badly deviated septum, ethmoids polypoid. Had T. & A. four years previously. Operation. Under general anesthesia, submucous resection, right and left ethmoids exenterated. Result: Good nasal breathing, vasomotor nose. One year after operation has had one attack of bronchitis with asthma.

L. A. N. Symptoms: Asthmatic attacks only in conjunction with head colds, which were frequent. Physical findings: Deviated septum, polypoid ethmoids. Sinuses transilluminated clear. Operation: Submucous resection and ethmoidectomy. Result: Three months later 100 per cent improved.

S., male, aet. 48, December, 1928. Symptoms: Nasal discharge as long as he could remember, frequently colds and sneezing. Asthma. Hayfever from Aug. 20 to frost. Repeated OMSA. Had had double radical frontals and antra operation twice. Physical findings: Mucous membrane pale and swollen, mucopus everywhere. All sinuses transilluminated dark. Culture from nose contained streptococcus viridans 2 plus, staphylococcus albus 4 plus and staphylococcus aureus 3 plus. X-ray: All sinuses completely obscured by dense, cloudy shadows. Punched out area above left frontal. Two hundred protein tests done in Chicago were negative. High colonic irrigations caused asthma and increase in swelling and discharge from nose. Operation: Double radical frontal, ethmoids and sphenoids. Right frontal closed off from nose contained mucocele ½x¾ in. in size. Left frontal had never been opened, hole had been made previously down to dura above frontal. Mucopus in ethmoids under pressure. One week later double radical antrum operation done under local anesthesia. Antra filled with polypoid tissue. Subsequent history: A flare-up about twice a year with much swelling of nasal mucosa, mucoid secretion and slight asthma. Subsides in about a week, when nose is fine with no swelling.

A. L., aet. 35. Symptoms: Asthma 1½ years. Right antrum had been washed out 85 times. Two hundred protein tests negative. Staphylococcus reaction 2 plus. For past month had new symptom, stuffiness of nose, followed by asthma every night. Could not stay in bed. Physical examination: Nasal mucosa pale. Posterior tips of middle and inferior turbinates polypoid, ethmoids polypoid. Transilluminated, right antrum dark, left very dim, right frontal slightly dim, left clear. Tonsils out. X-ray: Right frontal slightly blurred. Mucoperiosteal line left, clear. Ethmoids right and left, supraorbitals and labyrinth, moderately cloudy. Cellular structure almost invisible. Sphenoids moderately cloudy, patchy uneven distribution. Both antra very cloudy. Operation: Intranasal. Exenteration of ethmoids, large orbital extension, extremely thick mucus in cells. Polypoid tissue in sphenoids. Large window into antra, grape-like polyps in both. The following day there was swelling of the lids with ecchymosis on the left side, with diplopia later, some swelling and ecchymosis on the right side. All disappeared in seven

days. Result: No asthma since operation. Last seen three weeks after operation, just before he went abroad. Promised to report if he had return of symptoms, and have not heard from him.

M., female, aet. 41. Symptoms: Frequent head colds with severe cough. Hay fever from June to frost. Severe headaches. Physical examination: Transillumination: right antrum dark, left clear. Frontals clear. Mucous membrane pale, polypoid membrane in region of ethmoids. Lavage right antrum returned full of mucopus, left returned with orange-colored serous secretion that slowly coagulated. Several antral lavages on the right contained the same mucopus, but on the left only clumps of mucus, pus cells and flakes. X-ray: Right and left antra, sphenoids and ethmoids, cloudy. Frontals slightly cloudy. Operation: Ethmoids extended well anteriorly and posteriorly and over the antra. Took down anterior sphenoid and sphenoid-ethmoidal wall. Made large opening into frontal and antrum. Mucous membrane polypoid. Result: Two months after operation, sinus douche was negative, but mucous membrane very pale, complained of postnasal mucus. Since operation she has had about two so-called colds a year with edematous swelling of the membrane in some part of the upper nasal cavity. Sometimes there is mucopus in frontals, antra or sphenoids, but usually there is none. Patient was sensitive to her own streptococcus viridans and staphylococcus aureus. Also to rye, orchard grass, red-top, timothy, daisy plaintain, dock, ragweeds, goose feathers, dog hair, cattle hair, horse dander, rabbit hair, sheep wool and street dust. Hay fever attacks did not flare up the sinus. Present condition: Coryza. Mucous membrane very pale. Has pain about right and left frontals, polypoid or edematous swelling about right frontal orifice. Small quantity of mucopus in right frontal. Has as much pain about left frontal, but lavage is clear. Other sinuses not involved (1½ years postoperative).

R. N. E., male. Symptoms: Asthma for years. Physical examination: Had had polyps removed. Polypoid mucosa, polypoid middle turbinate and ethmoids. Transilluminated all clear except left antrum, which was dark. Operation: Submucous resection, ethmoidectomy. Enlarged frontal orifices and made window into right antrum. Result: Two years later complained of greenish mucus secretion, left side. Lavage of all sinuses negative. No asthma since operation.

L. R., male, aet. 40, 1923. Symptoms: Subject to colds. Had been treated by many doctors for many years. Physical examination: Mucosa very pale and swollen. Posterior tip of the inferior turbinate very swollen. Polypoid degeneration of ethmoids. Ton-

sils out. All sinuses transilluminated clear. Suspension done four times, showed staphylococcus pyogenous aureus 2 plus, streptococcus viridans 2 plus, and staphylococcus albus 3 plus. No result from vaccine. Seventy-two intradermal tests for food, animal products and pollens were all negative. X-ray: Antra, ethmoids and sphenoids were very cloudy. Operation: Patient would only consent to submucous resection, removal of one middle turbinate and removal of polyps. Subsequent history: Mucosa always very pale, some polyps. Flare-ups about four times a year. Posterior tip of inferior turbinate became enormous, with much clear mucoid secretion and with general swelling of the nasal mucosa, no pus.

M. S., female, aet. 30. Symptoms: Frontal headache, pain in cheeks. Nasal discharge for 20 years. Past two years had had intermittent discharge from right ear. Marked deafness. History: Adenoid operation six years previously. Double ethmoid operation, 1921. Tonsil and adenoidectomy again in 1921. Right mastoidectomy in 1921. Physical Examination: Mucosa pale. Mucoid secretion, at times watery. Transilluminated: frontals clear, right antrum dark, left clear. There was an opening into the right antrum. Both douched with negative result. The right ethmoids were mostly out, and the left had adhesions to the septum. The left sphenoid was open, with polyps around the orifice. Douched clear. The right tympanum had a large perforation central and inferior, there was a serous discharge from this ear. On the left there was a perforation, anteriorly, ear dry. Tubes tight. Suspension showed staphylococcus albus 2 plus, to which patient reacted. Staphylococcus aureus vaccine given gradually, increased to enormous doses. Result: Five years later patient had a small dry crust in attic of right ear. Mucosa pale but no sinus discharge.

G. W., female, aet. 50. Symptoms: Had had asthma since childhood. Recurrent coryza, considerable cough with dyspnea and headaches. Some nasal discharge. Physical examination: Mucosa pale and edematous, secretion watery. Middle turbinates edematous and polypoid, inferior turbinates swollen. Polypoid ethmoiditis. All sinuses transilluminated clear. Suspension contained streptococcus viridans 2 plus and staphylococcus aureus 2 plus. There was marked emphysema of the lungs and asthmatic bronchitis. Fluoroscope showed areas of infiltration at hila. Operation: Double ethmoidectomy and sphenoidectomy. Polypoid tissue throughout. Result: One year later only slight asthma when traveling by train. Tests for house and street dusts had been negative.

39 East 50th Street.

THE CAUSES, SYMPTOMS AND RECENT AIDS TO DIAGNOSIS OF MAXILLARY SINUSITIS. PRESENTATION OF LIPIODOL CASES.*

DR. MARVIN F. JONES AND DR. PEER M. LUND, New York.

Disease of the paranasal sinuses is often difficult to diagnose. Therefore, any aids employed in recognizing and treating sinusitis are always welcomed. I will confine my remarks to causes and aids to diagnosis of maxillary sinusitis.

It seems reasonable to assume that infections of the nasal mucous membrane must, frequently cause changes in the lining membrane of the sinuses. In most cases both the sinuses and the nasal mucous membrane return to normal after acute infections.

To determine the underlying causes of recurrent maxillary sinusitis, we must consider the general physical conditions which allow infections to occur.

The causes of head infections may be condensed into a short sentence. A combination of reduced resistance and a virulent organism. A subnormal person may be the subject of repeated "head colds" caused by an organism of moderate virulence. Conversely, we have all seen epidemics of "head colds" often enough to know that a germ of increased virulence may cause attacks in the patient with normal resistance. The subnormal person is more apt to have a sinus infection and the normal type usually generates adequate resistance. When, howeved, we are confronted with low resistance of a patient and high virulence of bacteria, it means trouble.

Patients having had sinus trouble are more prone to have subsequent attacks and the cause of this is frequently found in the mode of living. Since repeated colds almost invariably mean sinus trouble, a consideration of the cause of colds is a consideration of the cause of recurrent sinusitis.

The general consideration may be the most important.

Lack of out door exercise among urbanites certainly is one of the predominant factors producing lowered body resistance to physical hardships. This holds true also in the smaller communities. Occasionally there is a farmer or laborer who is subject to colds, but on closer examination, some obvious reason is usually found. Among the shop keepers and other indoor workers and among housewives

*Presented at the meeting of the Eastern Eye, Ear, Nose and Throat Association, at Troy, N. Y., Nov. 21, 1929.

Editor's Note: This ms. received in Laryngoscope Office and accepted for publication March 17, 1930.

who do not do their own work, the incidence of recurrent colds is much higher. Regular outdoor exercise for a stated time each day is as necessary to health as three regular meals a day. The former is needed to properly metabolize the latter.

Next in rank is improper or fad diets. The history of irregular, restricted and starvation diets is so concurrent with the history of recurrent colds that we cannot help believing a real relation exists. This dieting element as the cause of sinusitis has been definitely proven in the rat. In the human, a series of carefully considered histories will show a high coincidence, if not a proof. The elimination of Vitamins A and D from the fat reducing diet produces a fertile soil in the nose for the propagation of bacteria. On the other hand, over-eating produces an excess adiposity plus reduced resistance, but it is a more pleasant process.

Clothing is the next consideration. It is a popular idea that if we could wear no clothes we would become accustomed to the rigors of the climate and colds would be a thing of the past. For the vigorous individual this might work fine. A human, however, must have protection against changes in climate. This is universally so. There are individuals who today appear in the coldest weather with a mere suggestion of clothing. They are the more noticeable on this account. No one but the doctor sees the eventual result of this indiscretion. The changes in temperature with a consequent alternate over-heating and chilling of the body surfaces may be overcome by seasonable alteration in the quantity of clothing worn.

Sudden chilling of the body surfaces produces a reaction which ends in a cold. Of course a cold it not always the result, but certainly the history begins in some cases with indiscretion.

After a vigorous dance it is quite customary to rest before a window or on a balcony. This lowers the surface temperature of the body rapidly.

Severe exercise which causes a profuse perspiration, followed by an inactivity which allows the perspiration to evaporate from the clothing, produces an almost immediate result, evidenced by stiffness of the muscles and engorgement of the turbinates.

We have a splendid group of nurses in New York working under the supervision of the Henry Street Settlement. During the winter months these girls work in apartments with varied temperatures and become overheated or chilled. They develop sinusitis with the regularity of an occupational disease.

Lying on the shore in a wet bathing suit from which the sun causes a rapid evaporation of water, quickly causes a full feeling in

Dr. L. G. T. Case of a fibrous organization of granulation tissue most marked on the inner wall and anterior over over the dental area along the floor.

Dr. L. G. T. A history of chronic sinusitis over a long period of time. History of repeated boils and one large carbuncle on the neck. This case was one I was requested to take care of during the vacation period of his attending otolaryngologist. On June 28, the left antrum was irrigated and two rather large clumps of pus in the return flow. After irrigations on July 2 and 9 there was no change in the character of the discharge. Lipiodol was injected July 2, at which time there seemed to be a distinct thickening of the membrane with an extension toward a tooth socket. In these pictures also the lipiodol is shown emerging through the natural ostium. There was delayed elimination time and on July 9, an antrotomy was decided upon and performed. The discharge ceased while on a trip south and reoccurred again on his return to New York. I saw this patient for the last time on Aug. 1, and there was a flaky, purulent discharge present in the irrigation. On Sept. 5, a radical antrum was done and a cyst-like growth was found on the floor near the anterior wall. There was polypoid degeneration present around the natural ostium. This has been the only case where I have done an antrotomy that has demanded a radical procedure at a later date. I am indebted to Dr. Duncan MacPherson for the privilege of presenting this case.

the head. Bathing during an acute attack of coryza is almost sure to result in sinusitis. It is especially common to find sinus conditions in pool bathers and divers. If the popular sun bath must be part of the day's sport, let it be done before the bathing suit is wet.

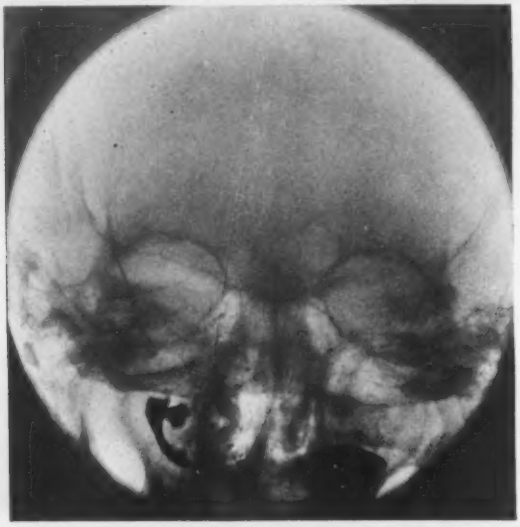
Mr. J. B. L. Almost complete obliteration of the antrum cavity by hypertrophied granulation tissue and membrane.

Mr. J. B. L. Profuse nasal discharge, difficult breathing, foul odor to breath, continuous colds. The left maxillary sinus was irrigated July 29, 1929; a thick, profuse, foul-smelling, flocculent, purulent discharge in the return flow. Lipiodol was injected July 31, at which time the antrum was almost completely filled with an edematous-looking membrane. Repeated irrigations did not alleviate the condition. Patient was advised to have an antrotomy done after his return from a trip abroad. This was done on Oct. 3, at which time the membrane was found to be considerably shrunken, but there was a large collection of granulation tissue plus a denuded bone area anterior and near the floor. From the history this evidently came from an old tooth extraction. Irrigation on Oct. 15 had a negative return flow.

Continued draughts playing on a portion of the human anatomy again causes this chilling, which we believe is a very important factor in the causation of colds. The increasingly popular and extremely pleasant habit of sitting before an electric fan when one is overheated surely brings grist to the doctor's mill.

Constipation and irregularity of the gastrointestinal tract causes the same congestion of the membranes of the head that is present in the lower reaches of this canal. A careful history shows that the patient frequently complains of constipation existing two or three days before the onset of a cold.

The allergic reactions deserve more consideration than the limits of this paper allow. It would be unjust on the other hand to leave



Mr. L. G. Right antrum filled with fibrous granulation tissue and polyps.

Mr. L. G. Patient complained of headaches for over one year, continuous colds and postnasal discharge, especially marked in the morning. Diagnosis made of left maxillary sinusitis, chronic. Both antra irrigated Sept. 27, coagulated mass in the return flow. Lipiodol was injected in both antra. The X-rays showed a growth in the left side with a normally eliminating sinus on the right. On Oct. 8, an antrotomy was done and polyps removed. Laboratory report: edematous, fibrous polyp with cyst. Measurements, 25 x 15 x 12 m.m. Discharged as cured Oct. 15, with a negative return flow.

this subject without some elucidation. The reaction to a foreign protein produces an enlargement of the turbinates, a pale boggy appearance to the membranes and a thin, profuse, watery discharge from the nose. The eyes itch and become red. Spasmodic sneezing occurs. The patient may be very miserable. Next we find this thin, serous discharge changed in character. A pus-forming organism has started its growth under these favorable conditions. The

discharge becomes yellowish, thick and tenacious. Soon pus accumulates in the sinuses. The protein reaction subsides, leaving the sinusitis predominating the picture.

Later these noses become dry and there is some sympathetic involvement, which is made manifest by asthmatic breathing. In this

Plate I.

Mrs. E. K. N. Showing the thickened membrane which is irregular and edematous in character. The first plate was taken June 18, 1929. The second plate was taken Sept. 24, 1929, showing the sinuses resolved.

Mrs. E. K. N. Patient had earaches when a child and a cold two weeks previous to her visit to my office. Diagnosis was made of chronic sinusitis and the right antrum was irrigated. There was a thick, coagulated return flow of pus. Lipiodol was injected. There was a marked constriction of the space in the antrum, probably caused by an edematous, thickened membrane. There was delayed elimination time. This patient on July 1, 1929, was referred to Dr. Hudson Wilson, of Ithaca, New York, and was advised that an antrotomy would have to be done. On June 26, 1929, X-ray of the sinuses showed the right antrum to be completely healed and the irrigation was negative. Patient discharged as cured. This is an example of extreme edema of the antral lining membrane, which returns to normal when the irritant is eliminated.

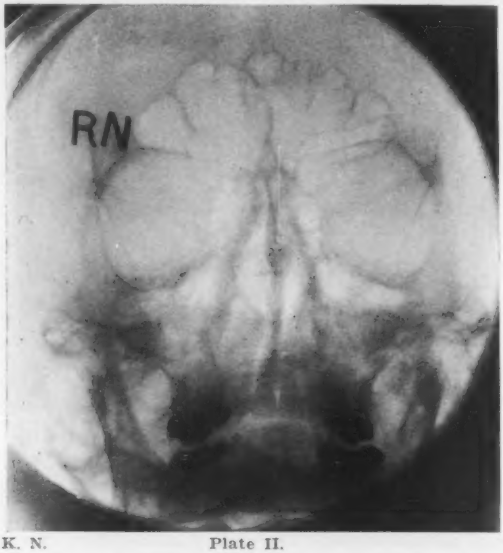
stage, dryness in the nasopharynx, loss of secretions, hoarseness, coughing and difficult breathing occur. The ethmoids are often diseased, the frontals and sphenoids less often, the antra are very frequently involved.

Occasionally the mere irrigation of a diseased maxillary sinus will stop asthma. At other times all procedures fail to produce

relief. These cases call for the combined and co-operated services of the allergist and the rhino-laryngologist. While the allergic group might properly come under the local classification of the causative factors of sinusitis, it is essentially a systemic disease and, therefore, is placed in the category of remote causes.

The immediate cause is most often nasal pathology. We should enlarge this field a little farther, however, and mention diseased tonsils.

Adenoids also do cause sinusitis by preventing proper postnasal drainage. The reverse is also true, that the purulent drainage from

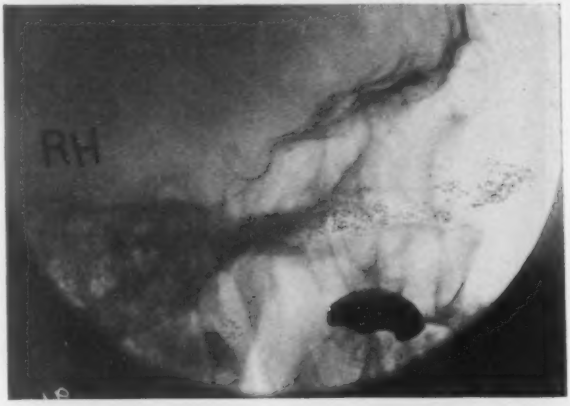


Mrs. E. K. N. Plate II.

a sinusitis will cause a recurrence of removed adenoid tissue and will cause an hypertrophy of normal adenoid tissue.

To cite the septum and turbinates as causes of sinusitis, will be apt to raise a protest. They act mechanically to prevent proper aeration and drainage of the sinuses. When the turbinates are enlarged by irritation of bacterial or other agents, they impede the passage of air. A sneeze, cough or forcible blowing the the nose will cause infected material to enter the sinuses by way of the ostea. The septum, if sufficiently deflected to cause obstruction, or if it is in contact with the side wall of the nose, will also predispose the patient to nasal disorders and prolong convalescence.

Benign or malignant growths mechanically obstruct the nose and may erode the sinus wall. Polyps are classed under the head of benign growths and are largely the product of a diseased sinus. Foreign bodies and otoliths should receive mention. The foreign bodies, such as gauze, cotton and Bernay sponges, placed in the nose by the surgeon would be classed as causing accidental sinusitis.



Dr. E. H. Showing the lipiodol on a plate taken Sept. 19, 1929, and a second plate taken Nov. 4, 1929. The lipiodol is still in the antrum. This patient has been entirely free of symptoms since the second irrigation, which returned clear. No evidence of lipiodol in the return flow.

Dr. E. H. Frontal headaches, postnasal discharge, rather frequent colds and chronic bronchitis. Sept. 19, diagnosis of right antrum sinusitis was made, chronic. Antrum was irrigated and specimen sent to the laboratory for bacteriological diagnosis. In the return flow was profuse, coagulated pus. Patient had a bad reaction and was given ammonia and whiskey. Lipiodol was injected into the antrum and this showed definite sinus extending toward the tooth socket. After the second irrigation there was a negative return flow and the patient was free of symptoms. Culture showed a growth of streptococcus viridans, with a few colonies of staphlococcus aureus. There was a retention of the lipiodol for much longer than the usual length of time, which was possibly due to a small natural orifice from the antrum. This opinion was arrived at because of the difficulty in irrigation. It was necessary to use considerable pressure to force the irrigating fluid slowly through. Oct. 22, 1929, discharged free of symptoms.

Last on this list of causes of sinusitis is the dental factor. Our researchers have tended to confirm the findings of other investigators in this field. A high percentage of sinusitis, particularly of the chronic type, originates from infected teeth roots and sockets. We are presenting tonight some cases to prove this contention. The tooth having been extracted and apparently healed, may leave an infected area which extends into the antrum. When I perceive a

foul-smelling, cheesy material, or milky return in the irrigation fluid, I am suspicious of bone involvement around the alveolar process. Root canal fillings which penerate the apices, root abscesses, osteomyelitis and dental instruments may penetrate the antrum wall and cause infection. The dental origin of sinusitis should be given more

Miss M. C. This plate shows two fluid levels. One is the level of the lysol solution used to irrigate the antrum, and the other is lipiodol. One drop of lipiodol remains on the surface of the lysol solution.

Miss M. C. Attacks of sinusitis which have cleared up under irrigation. June 18, 1929, the right antrum was irrigated and a noneliminating sinus was diagnosed from the lipiodol pictures. This patient first came to me on Oct. 18, 1928, when she had severe asthmatic attacks and coughing, which were relieved by maxillary irrigation. On Nov. 13, 1928, she had a middle turbinectomy and ethmoidectomy, bilateral. Patient's condition did not warrant further operative procedure. On Aug. 5, 1929, an antrotomy was done on the right side. Sept. 9, 1929, the patient was discharged as cured.

consideration. A closer co-operation with the oral surgeons could reduce the incidence of this class of case.

No time spent in minute examination to arrive at a correct diagnosis is wasted. If an improvement or cure is to be obtained in sinus disease, it becomes imperative that the examiner spend time making a detailed investigation. The acute cases are most spectacular and also frank in their manifestations. Under proper treatment

they respond readily. It is the recurrent chronic cases that tax our ingenuity.

The symptoms of which the patient complains include the following:

"Catarrh," dryness of the throat and nose; sensation of something in the throat, with a tickling or irritation; frequent clearing of the

Mr. B. C. Showing lipiodol extending into a necrotic area in the region of an extracted tooth.

Mr. B. C. History of asthmatic attacks, coughing and repeated colds. Left antrum irrigated April 24, 1929, with a very profuse return of caseous material. In this case lipiodol was injected and gravitated into an old tooth socket. The subsequent pictures showed a noneliminating antrum. Radical antrum was advised, which was done July 16, 1929. On the righthand side of the floor, anteriorly, there was a definite pocket filled with pus and granulation tissue, which led to an old tooth socket. On Aug. 6, nasal condition had resolved, with a negative return flow in the irrigation. On Sept. 4, patient still had some postnasal discharge, coughed and had asthmatic attacks.

throat or hawking to obtain a mass of tenacious, yellow, gelatinous material; hoarseness with a dry-nonproductive cough; the morning house cleaning of the nasopharynx, accomplished by various sprays, gargles and irrigations, gagging and occasionally vomiting; bad breath; scabbing of the nose and nasopharynx; redness and dis-

charge in the eyes with visual disturbances; headaches, neuralgic pains in the face and teeth, aching in the back of the neck and shoulders; drowsiness, dizziness, lack of ambition, mental depression and exhilaration, stupidity; nausea and loss of appetite; asthmatoid attacks. These and many other complaints are the common story of patients suffering from sinusitis. Sometimes the sinus condition is

Mr. M. Z. Showing a partition in the maxillary antrum which encloses an air cavity and excludes the lipiodol.

Mr. M. Z. Diagnosis, chronic left maxillary sinusitis. This was irrigated July 18, large mucoid, coagulated mass in the return flow. Lipiodol was injected, then it was radiographed, and showed an irregular, thickened membrane on the floor, with a partition extending down from the orbital plate. The lipiodol can be seen escaping from the normal ostium. Aug. 6, the last irrigation done, at which time the return flow was clear and the patient was without symptoms.

the cause, other times it is concurrent and, not infrequently, it is the result of other conditions which may cause similar symptoms.

Objective symptoms: The turbinates at first are swollen, red and glazed. Later they are enlarged and red, but the membrane becomes dull and lustreless. Finally the turbinates become atrophied, dried

and covered by hard scabs. The other nasal mucous membranes undergo similar changes.

The result to the nasal passages is at first obstruction, then an opening which is too large.

The discharge in the nose is at first mucopurulent and profuse, later reduced in amount but thicker in consistency. When the nasal membranes have atrophied, the ability to expel this pus from the nose becomes mechanically difficult and it is usually found resting on the floor of the nose or collected in the nasopharynx.

The nose having first been examined without medication, my practice is to insert a tampon (moisted with 30 per cent alypin and a couple of drops of 1 to 1,000 adrenalin chloride) into the nose. This is allowed to remain until the rest of the examination is completed.

Transillumination is a good and fairly accurate aid in diagnosis.

Examination of the throat reveals a pathology of the posterior pharyngeal wall which closely resembles the pathology of the nasal membrane. In chronic cases, and sometimes in the more acute type, there is a significant swelling of lymphoid tissue behind the posterior pillars extending upwards to disappear in the nasopharynx. Discharge my be seen coming down these lateral walls and following the course of the hypertrophied tissue. Enlarged lymphoid nodules are also present on the posterior pharyngeal wall. Dried, glassy, tenacious pus may be seen adherent to the surface.

Larngeal examination reveals the same dried surface of the membranes. Secretion may be present between and around the true vocal cords. The cords have lost their glistening white appearance and are now thickened, injected and dry. Sometimes a good view of the trachea may be obtained and the same condition extends as far as the vision reaches.

Ear examination gives the evidence of tubal pathology. There is loss of lustre, dilated blood vessels in Shrapnell's area. There is either atonia of the membrana in a prolapsed position or extreme retraction and having the quality of thin tissue paper.

Reverting to the nose, after removing the cotton pledgets, profuse discharge may be visible coming from the area of the normal ostea, but more frequently is not. The purulent discharge is very thick in the chronic cases and only after repeated examinations following mild suction, may the source be located.

The nasopharyngoscope has been a greatly appreciated aid in diagnosis. I still use the postnasal mirror but a larger percentage of cases are easily examined by the nasopharyngoscope and the informa-

tion obtained is more satisfactory. Hypertrophied or polypoid posterior tips of the inferior turbinates are easily visible and they usually signify a prolonged irritation from pus flowing over them which has exuded from the normal opening of the maxillary antrum. When the sphenoid sinus is involved the area around the ostium shows inflammatory changes characterized by dilated blood vessels and hyperemia. Pus in the superior posterior meatus is significant of posterior ethmoidal involvement. These are some of the diagnostic points which the nasopharyngoscope renders fairly definite. Polyps and postnasal growths may be added to this list but only when the polypus is seen emerging from the maxillary sinus does this enter our present discussion.

Cytology and bacteriology of the antral contents are the subjects of recent interesting experiments as aids to diagnosis. The character of the organism will probably alter some of our treatment methods in the future, but insufficient proof has been established to date to warrant a separate process of treatment for each type of organism.

The study of cytology promises a distinct contribution in the treatment of the maxillary sinusitis. More work needs to be done by additional observers before its usefulness is established.

The antrascope is of value in diagnosis and also in operative and post-operative procedures. Examination of the antrum by passing the scope through a cannula in the nasal wall of the antrum has not been as satisfactory as I had hoped. It sometimes gives valuable information when used in this manner. The antrascope has been of greater use to me in visualizing the restorative process after antrotomies and examining the cavities during radicals. My chief difficulty has been to keep blood and secretions from covering the lens.

Antrum irrigation was my final court of appeal before the use of radiopaque substances. I had always felt confident that a negative irrigation meant a negative antrum. My procedure had been to irrigate a rather long intervals for a reasonable length of time and then either do an antrotomy or radical antrum, as the appearance of the case indicated.

I believe we have now developed an agent which will materially change our handling of these cases and which promises to be an aid in obtaining better end-results.

The use of X-ray has been accepted as a valuable aid in diagnosing maxillary disease. That it sometimes badly misleads us is also a recognized fact. In adding the stereoscopic examination, a distinct advance in the accuracy of interpretation has been possible. Since we have been using lipiodol routinely, I am convinced that this agent

bids to be one of the most, if not the most, important single factor in diagnosis.

DEDUCTIONS

1. Radiopaque harmless substances are an aid in diagnosing pathology in the antrum.

2. Solutions of lipiodol in olive oil are satisfactory, nonirritating and may have a therapeutic effect.

3. Irrigation of an antrum does not entirely eliminate material which has a higher specific gravity than the irrigating fluid.

4. Tremendous edema and thickening of the lining membrane of the antrum may return to normal when the irritating substance is removed.

5. A functionless membrane lining an antrum wall will give a clear X-ray picture and have diseased material present in the antrum. This condition of the membrane is indicated by a long elimination time of lipiodol.

6. Polyps in the antrum are easily diagnosed by the use of lipiodol and although the washings are clear, the presence of polyps render recurrent sinusitis more probable.

7. A high percentage of recurrent sinusitis is of dental origin.

8. The use of lipiodol and stereoscopic X-rays facilitates the selection of operation and eliminates wasted time spent in irrigating or otherwise treating an operable sinus.

The radiograms and histories accompanying this paper have been selected from a series of 50 private cases, which have had lipiodol injected.

121 East 60th Street.

NASAL RECONSTRUCTION BY MEANS OF THE BONE AND CARTILAGE EXISTING WITHIN THE OLD TRAUMATIZED NOSE. ILLUSTRATED BY PLASTER MODELS AND LANTERN SLIDES OF PREOPERATIVE AND POSTOPERATIVE CASES.*

DR. MYRON METZENBAUM, Cleveland.

In cases of old traumatic nasal deformities, where the bones and cartilages are fractured, deflected and depressed, and where the loss of bone and cartilage is not excessive, it is often possible to refracture and reassemble the bones and cartilages existing within the nose and to reconstruct the nose to nearly its normal appearance and to re-establish good functional breathing through both nares without the introduction of a cartilage graft taken from the rib or a bone graft taken from the tibia or without the introduction of any foreign graft, such as ivory.

When a house is partially wrecked by a cyclone, the structure may be twisted, broken and partially knocked down, yet all of the existing material may be used toward the reconstruction of the house. Likewise, when a nose is severely traumatized, the bones and cartilages may be fractured and dislocated, the nasal framework partially knocked down, yet all of the existing material may be used toward the reconstruction of the nose.

In an old, severely traumatized nose, the osseous bridge is usually fractured and depressed, the base of the nose spread, the septal cartilage fractured, depressed and dislocated from the groove in the vomer and from the supporting position in the nasal tip.

At the seat of fracture there are callus formations and over the fractured area of the depressed nasal bridge there is usually an exuberant callus which may raise the bridge at this point to even a higher level than normal.

RECONSTRUCTION OF THE OLD TRAUMATIC NOSE.

By the aid of the saw, chisel, scissors or knife, elevators or forceps, the dislocated bones or cartilages may be separated from their false positions and reassembled into their former anatomical relations.

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*Read before the Ear, Nose and Throat Section at the Annual Meeting of the Ohio State Medical Association at Cincinnati in May, 1928.

Editor's Note: This ms. received in The Laryngoscope Office and accepted for publication July 23, 1928.

Fig. 1. Due to a severe traumatism the nasal parts of the maxillary bones were:
1. Fractured along their "nasomaxillary lines."
2. Both nasal bones were also fractured and depressed at their nasofrontal union.
3. The bony and cartilaginous septum was fractured and also dislocated from the ridge in the vomer and from the supporting position in the midline of the bony nasal dorsum and from the supporting position to the soft tissues of the nasal tip.

The effects of these fractures and dislocations resulted in: 1. A spreading of the base of the nose. 2. A depressing of the nose and forcing the nasal bones closer to the face. 3. A widening of the bony portion of the dorsum of the nose.

Fig. 2. Showing a graft placed over the depressed nose. The depressed nose could only be improved outwardly by a cartilage or bone transplant placed over the dorsum of the nose. This procedure would still leave:
1. The nose depressed.
2. The nares partially blocked.
3. The septal cartilage deflected.
4. The nasal base unnaturally broad.
5. And would involve an operation to obtain the necessary cartilage or bone graft.

Fig. 3. Reconstruction. Reversing the mechanical steps which caused the nasal deformity: 1. The base of the nose at the "nasomaxillary lines" were separated intranasally. 2. The base and sides were forced toward each other.

This procedure: 1. Narrowed the bony nasal base. 2. Raised the depressed nasal bones and the nasal portion of the maxillary bones. 3. Narrowed the bony dorsum of the nose and liberated the cramped bony and cartilaginus septum so it could be reset into its normal position in the median line.

Summary: By this method: 1. The fractured dislocated nasal bones. 2. The nasal portion of the maxillary bones. 3. The bony and cartilaginous septum were all restored to their former anatomical relations. 4. The patency of both nares was reestablished.

Fig 1.

Fig. 2.

Fig. 1. Front view of traumatized nose with occlusion of both nares and depressed nasal tip due to partial loss of bony and cartilaginous septum and fractured nasomaxillary bones.

Fig. 2. Front view of nose after the reconstruction from the tissues existing within the nose.

Fig. 3.

Fig. 4.

Fig. 3. Side view of the nose showing the depressed lower half of the nose due to partial loss of the bony and cartilaginous septum and the fractured nasomaxillary bones.

Fig. 4. Side view of the nose after reconstruction from the tissues existing within the nose which gave support to the soft tissues and re-established patency to the nares.

Where there is a moderate loss of bone or cartilage, the deficiency can often be supplied by using the exuberant callus, which usually forms at the seat of fracture over the nasal bridge, as an autograft. Small losses of cartilage may be supplied by shifting pieces of cartilage from the lower lateral or from the septal cartilages.

Principles: In old traumatic cases where the loss of tissue is not great: *1.* After the nasal base is narrowed. *2.* The dislocated septum replaced. *3.* The exuberant callus shifted to fill in depressions or to give support to the nasal tip. *4.* After all the material existing within the nose is utilized toward its reconstruction, the nose cannot usually be further materially improved in either function or appearance by the insertion of a graft.

When the nose has been reconstructed as far as possible from the material existing and it is found that a graft is still necessary to complete its reconstruction, then the necessary graft will be considerably smaller than if the existing material had not been first reassembled and the nose will have a more natural appearance than if the graft had been originally inserted on top of the spread and depressed nose. A graft which simply restores the dorsum or roof of the nose by resting upon the old material of a fractured nose as a base is like building a new superstructure on the base of a partially wrecked house.

Causes and Results: A force applied over the nasal bridge or dorsum of the nose may result in:

1. A fracture of the nasal bones at their nasofrontal union with depression of the nasal bones.

2. Simultaneously the transmitted force fractures the nasal portion of the maxillary bones at, what I choose to call, the "nasomaxillary line", resulting in a spreading of the nasal base. This brings the bony framework of the nose in closer contact with the face, thereby lowering the nose. Within the nose there is a tearing of the tissues along the lower border of the nasal portion of the maxillary bones.

3. Fracture of the bony portion of the septum resulting in bulging or over-riding of the septum.

4. Fracture of the cartilaginous septum with *a.* dislocation of the lower end of the septum from the groove in the vomer, resulting in a partial occlusion to one or both nares; *b.* dislocation of the septum from its supporting position in the columella; *c.* removal of the supporting position of the septum from underneath the soft tissues of the nasal tip, resulting in a lowering of the nasal tip toward the upper lip.

Additional deformities take place in the bony and cartilaginous portion of the fractured nose. One or both nasal bones are usually fractured and separated from each other in the median line and deviated to one or both sides. The nasal bones are actually depressed and are closer to the face than normally, but the exuberant hump which is formed upon the injured nasal bones and the upper lateral cartilages may be of such a size as to give the nose at this point the appearance of being *very prominent.*

One or both upper lateral cartilages are usually depressed and deflected and partially separated at the upper borders from their attachment to the lower borders of the two nasal bones. The nasal septum may be fractured, depressed, deflected, partially dislocated and bent in one or both of the nares. The upper border of the septum may be separated from the lower border of the perpendicular plate of the ethmoid and vomer and at this junction there may be formed later the typical septum spur. The posterior border of the septum may be partially or totally dislocated from the groove in the vomer and at this line of dislocation there usually results a bony ridge, which partially closes the lower portion of one or both nostrils.

For the reconstruction of cases of this type there is a rather definite procedure now to be described. Remembering the mechanics which produce the spreading of the nasal base and depress and flatten the dorsum, the reconstruction of the nose may be attempted and often accomplished if these mechanical processes are reversed. These steps tend to restore the nose to its former geometrical relations and appearance, and after the bony portion of the nose has been reassembled, then it may be possible to spring, reassemble or to replace the cartilaginous septum into its former position so that it will give support to the soft tissues, raise the flattened nasal tip and re-establish patency to both nares.

Operation: In old traumatic cases the nasomaxillary union must usually be severed on both sides by saw, chisel or combination and the bony sides brought closer together. When the sides of the base of the nose are forced in closer apposition toward each other, this raises the nose away from off the face and overcomes the nasal depression. The reconstruction of the bony nasal structures make it possible to proceed with a restoration of the cartilaginous structures.

In simple cases the separation of the nasomaxillary union is the first step which may render it possible to completely reverse the mechanical processes which caused the bony nasal deformity. In most cases it is necessary to render the dorsum of the nose flexible so its broad surface will become narrower and so the nasal bones

will refracture at the nasofrontal union. To make this possible, parallel saw lines are made through the nasal bones, 1 m.m. to either side of the median border, so that when the nasomaxillary bones are forced toward each other, the nasal bones will fracture along these parallel saw lines and will also fracture at their nasofrontal union, thereby narrowing and raising the bony nasal bridge.

In most traumatic cases there is a hump resting upon the nasal bones. The hump is first removed by a saw or chisel, scissors or knife. The removal of the hump usually takes in part or the entire thickness of the nasal bones and in effect accomplishes more or, at least, as much as the parallel saw lines through the dorsum of the nose, thereby the dorsum of the nose is rendered extremely flexible, so that when the base is separated at the nasomaxillary lines and compressed the nasal base and the nasal dorsum will be narrowed and the nose will be raised.

Replacing the Cartilaginous Septum: The reassembling and the reconstruction of the osseous portion of the nose will sometimes liberate the cramped cartilaginous septum so that a bent septum may be sprung back into its former position. When the septum has been dislocated from its groove in the vomer, the surrounding callus may be removed and the septum more easily replaced. The dislocation of the septum with the lower border of the perpendicular plate of the ethmoid and the nasal bones can now also be replaced.

In cases where the cartilaginous septum is depressed along the dorsal border due to a moderate amount of absorption of the cartilage, the nasal hump can be forced down into a channel made over the depression and used as a suitable medium for the filling in of the depression. In cases where there is no hump, the small nasal depression over the cartilaginous septum may be filled by any bits of cartilage or callus found within the nose. These bits of cartilage or callus may be as small as a grain of wheat. They are simply stuffed into the channel made above the depression, where they usually become organized. Should they absorb, they leave behind a fibrous tissue, which is usually quite sufficient to give support and help to maintain the contour of the nose.

In cases where the tip of the nose is over broad, the narrowing of the tip may improve the appearance. In such cases a narrow strip of cartilage is removed from the lower lateral cartilage parallel with the septum. These narrow strips taken from the lateral cartilages may be used for the building up of small depressions above the cartilaginous septum. Should none of these sources be available to obtain cartilage within the nose, then an oval or rectangular piece

of cartilage may be taken from the body of the lower lateral cartilage. This has no ill effect upon the lower lateral cartilages and these portions of cartilage are ideal transplants for the upbuilding of small depressions above the depressed septal cartilage.

As a matter of practice, it is surprising how a small, almost insignificant piece of cartilage is quite sufficient to restore a seemingly prominent depression over the cartilaginous septum.

Should there still be a lack of material within the nose for the total reconstruction, this can be obtained by taking a piece of cartilage from the back of one or both ears. Where the loss of tissue is more than can be supplied by all of these sources, then cartilage taken from the rib gives the most satisfactory result.

Summary: In all cases of old traumatic nasal deformities, where the loss of tissue is not great—

1. If the nose is reconstructed by first reassembling the bones and cartilage into their former anatomical relations.

2. Then utilizing the available callus and cartilage existing within the nose, a graft will seldom be necessary.

3. Should a graft be necessary it will be smaller than if the nose had not been first reconstructed.

4. The nose will have a more natural appearance if the graft is placed upon the reconstructed nasal base than if placed upon a spread and flattened nasal base.

736 Rose Building.

CORRECTION OF FACIAL DEFORMITIES WITH SPECIAL REFERENCE TO RHINOPLASTY. FEW STATISTICAL DATA.*

Dr. Jacques W. Maliniak, New York.

The object of this paper is to summarize the important factors involved in surgery of a definite group of facial deformities. It may seem superfluous to specify here the general requirements of this operative work, but unfortunately reconstructive surgery is still too often practiced in seclusion in private hospitals with no valuable record control. Criticism often voiced by the medical profession in regard to this unrecorded surgical work reflects unfavorably upon the entire specialty.

Departments of reconstructive surgery have been officially created in the leading hospitals of this city only during the last few years. The material pertaining to plastic surgery had, up to this time, been handled by all the departments, and no statistical records in regard to these cases were available. This report is largely confined to rhinoplastic cases treated during the last six months in Sydenham Hospital. I thought it to be also of interest to present from my service in the City Hospital, a few cases with severe facial injuries, and particulars relating to their repair.

The indications with which we have to deal in this group of deformities are of anatomical, functional, professional and social orders. All operative rhinoplastic cases can be divided into two groups of congenital and acquired origin.

1. The congenital group consists of oversized and depressed nasal deformities involving: *a.* all nasal diameters; *b.* the bony structures only; *c.* the cartilaginous nose.

2. The acquired group consists of: *a.* Recent nasal fractures; *b.* Scoliotic nose—old nasal fracture involving external and internal structures of the nasal pyramid; *c.* Twisted nose—involving mostly the cartilaginous portion, and often accompanied by a subluxated septum; *d.* Laterally, in toto displaced nose.

These two groups of nasal deformities present themselves with or without nasal obstruction.

What is the percentage of infections in corrective rhinoplasty? What is the number of failures, from the point of view of end-

*From the Plastic Surgery Department of Sydenham Hospital, New York. Editor's Note: This ms. received in Laryngoscope Office and accepted for publication March 21, 1930.

result? Is there any danger attached to the operative procedure? These questions are put to me quite frequently by patients, as well as physicians, who do not always have a clear conception of all the factors involved in a rhinoplasty. These inquiries can now be adequately answered, because of the precise hospital records, and a thorough follow-up of the postoperative results.

The same definite statistical information would be more difficult to obtain in other deformities, as for instance, those requiring different types of skin grafting; these are indicated in a multitude of conditions as postoperative defects, burns and congenital skin blemishes, and the end results would depend on the character of the wound to be grafted, its location and size, the age of the patient,

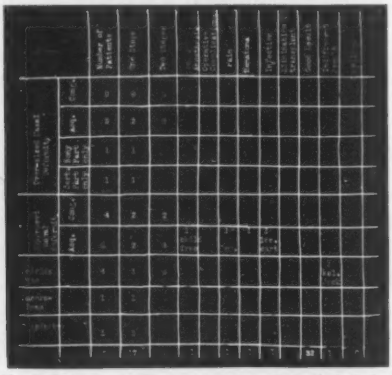

Fig. 1. Statistical data covering a group of facial deformities operated upon over a period of a few months by similar surgical procedures.

etc. But the group of nasal deformities is more or less uniform, and the technique in different types, well established. The table below represents a group of 33 cases treated in Sydenham Hospital during the last six months (Fig. 1). Without entering into a lengthy description of the operative technique, which is not the object of this paper, I will state here only the *general considerations* to be closely observed in this branch of surgery:

1. Only conspicuous deformities are corrected. The mental attitude of the patient is taken into consideration, and neurotic individuals, without pronounced disfigurements let alone. The functional disturbance caused by the deformity is one of the deciding factors favoring operative procedure.

2. A complete physical examination of the patient before the operation is necessary. The presence of active lues contraindicates surgical interference. An active or latent infection of the nasal cavities or accessory sinuses should be eliminated as a phlegmon or erysipelas may complicate an operation performed under such circumstances.

3. Unretouched photographs and casts of the preoperative condition of the face should be at hand prior to the operation. They are of untold value for the records and permit a systematic study of the different operative stages which may be required during the reconstruction.

Fig. 2. Conspicuous type of oversized convex nasal deformity with dropping of nasal tip. This type of deformity often causes difficult breathing.

4. Asepsis is one of the important conditions upon which the final end-result depends. The skin should be carefully prepared for a few days prior to the operation, by steaming and cleansing with soap and water. The preparation of the nasal cavities during the operative procedure consists in cleaning them with boric acid solution and bichlorid of mercury (1-2000) and application of half-strength of iodin to the skin of the vestibular region. The nasal cavities are packed with iodoform gauze for the purpose of isolation from the clean vestibulum, and avoidance of postnasal hemorrhage. The sterilization of instruments, operative material and surgeon's hands should be carried out with the same thoroughness as in other major operations.

5. As a rule, rhinoplastic operations are performed by infiltrating, or in some cases by nerve block anesthesia. A solution of 1 per cent novocain with a few drops of adrenalin (1-1000) to 1 ounce is used. The exceptions to this rule are operations for recent nasal fractures with extensive traumatic reaction and operations upon children, in which general anesthesia is frequently indicated. The youngest child from the present group of cases, on whom local anesthesia was used in operating for nasal fracture, was eight years of age.

6. The correction of oversized nasal deformities should always be performed through the endonasal route, which provides the most direct and ready access to the nasal bones and cartilages. The external route may sometimes be indicated in cases of chronic nasal

Fig. 3. Same patient as in Fig. 2 after intranasal removal of the oversized osteocartilaginous part of nasal dorsum, shortening of nose, and narrowing of bony bridge. The nasal obstruction is relieved simultaneously by correcting the subluxated septum and raising the dropped nasal tip.

infections reluctant to treatment. The operative procedure consists in a wide undermining of the nasal skin, together with periosteum and separation of the columella from the septum. In this way the entire nasal frame may be inspected directly, and all operative manipulations performed under direct vision. The technique of the "touch system" as used by some surgeons unfamiliar with rhinoscopic examinations should be discarded as dangerous. This is the condition *sine qua non* for a successful rhinoplasty.

7. Removal of oversized bony and cartilaginous parts of the nasal frame should always be followed by the narrowing of the bridge in order to avoid a conspicuous flattening of the dorsum—one of the

most frequent factors in postoperative failures. The use of chisels in this operative step should be avoided as inaccurate and dangerous. Appropriate fine saws properly handled are the sole instruments with which these accurate manipulations can be properly carried out. The narrowing of the nasal bridge is incomplete without infraction of the nasofrontal suture. Failure to carry out this step in the operative technique represents another cause of unsatisfctory results[1].

8. The correction of nasal depressions is done preferably by a cartilaginous transplant introduced through a columellar incision.

Fig. 4.

Fig. 5.

Fig. 4. Saddle back nasal deformity due to trauma in childhood accompanied by scarring of forehead and glabellar region.

Fig. 5. Same patient after excision of scars on face and nose and correction of right epicanthus. Rib cartilage transplant for the saddle back nose was performed in a second stage.

The introduction of a cartilaginous graft through the nasal cavity should be avoided because of the possibility of infecting the transplant directly or indirectly through the stitches. The cartilage is taken from the seventh or eighth rib, after careful separation of the perichondrium, for protection of the pleura. In cases of smaller nasal defects, the amount of cartilage required for the correction can be obtained without interrupting the continuity of the rib cartilage. The use of auricular or alar cartilages, together with the perichondrium, is indicated only in a slight dorsal depression. The proper shaping of the cartilaginous graft, its exact fitting into the defect, the avoidance of hematoma, proper immobilization during the post-

operative period, are other factors of prime importance in a successful rhinoplasty[2 3] (Figs 4 and 5).

There is no advantage in transplanting a bone cartilage graft for filling out nasal defects. The use of a bony transplant alone is contra-indicated because of unavoidable absorption. The syphilitic type of depressed nasal deformities requires a more laborious operative procedure, already discussed in previous publications[3].

In pursuing the aim of reconstructing nasal deformities, no effort should be spared to approach a perfect end-result by improving the operative technique.

The analysis of cases presented here shows that from a total of 26 rhinoplasties, we had one localized infection in an adult in a cartilaginous graft used for the correction of a traumatic saddle deformity, and one case of hematoma, in a child, after reduction of a recent nasal fracture, under general anesthesia. In both instances these complications did not prevent satisfactory end-results. In the first case, despite the slight localized infection, the greater part of the cartilaginous graft healed properly, after disinfection, and drainage of the wound. The cartilage in this case was introduced through the glabellar region for the correction of a recent post-traumatic nasal depression with surrounding lacerations. Latent infection probably still present during the time of cartilage transplantation may have caused this slight complication; the remaining part of the graft, however, sufficiently corrected the deformity. This occurrence points to the great advantage of using cartilage as free graft, in preference to bone or any foreign substance. It may also be deduced from this and other similar cases, that the insertion of a free graft in a previously infected area should be sufficiently delayed as to eliminate the possibility of this complication.

In the second case, of a young boy, a hematoma followed the reduction under general anesthesia, of a recent fracture. Endonasal drainage, with proper compressive dressing for 10 days, relieved entirely the condition and the result was entirely satisfactory.

In 12 patients out of 26, a two-stage operation was performed. This was indicated especially in the acquired type (over 60 per cent), frequently accompanied by a septal deflection, due to fracture, with nasal obstruction. The end-result in all 26 cases, without one exception, was good, from a cosmetic and functional point of view, as can be judged from the projected photographs and the patients here presented.

HYPERTROPHIC SCARS.

The treatment of pronounced keloidal and hypertrophic scars of postoperative and traumatic origin consisted of a complete excision

and subcuticular closure of the wound with the use of fine suture material; removal of sutures on the third day, followed by weekly X-ray applications (one-sixth of a skin unit), continued eight to 10 weeks. By this procedure, quite satisfactory results were obtained.

This brief statistical analysis of reconstructive cases from the Sydenham Hospital concurs largely with that of 520 rhinoplasties performed by me during the last 10 years. The final result in this large group of cases, however, improved with increased experience and eye-adaptation. A complete report on this operative material will follow soon.

Conclusion: Plastic operations for nasal deformities of congenital and acquired origin have definite indications. These should be based on the conspicuousness of the deformity and the presence of functional disorders. Social, professional and mental status of the patient must also be taken into consideration. Rhinoplastic operations, performed in healthy individuals, with all aseptic precautions and due skill and experience, are uniformly followed by good results. Active lues and pronounced paranasal infections contra-indicate, temporarily, rhinoplastic surgery, and intensive treatment for these conditions should precede the operation. In using cartilaginous grafts for facial reconstruction, an occasional infection of these implants will not interfere with the final end-result, provided the condition is properly handled. All autoplastic transplants, other than cartilage are less resistant to infection, and being easily absorbed, are contra-indicated for filling out tissue defects.

(*1.* Follows presentation of cases illustrating different types of corrective rhinoplasty;

2. Presentation of a case of subtotal loss of nose of traumatic origin in a male, age 64, with correction by a tubed temporal flap from forehead with lining provided by the nasal skin taken from around the defect;

3. Reconstruction for loss of lower eyelid with underlying infra-orbital defect, and loss of eye, due to severe burn: Correction by the use of a pedicled temporal flap and rebuilding of the eyesocket.)

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1125 Park Avenue.

THE IMPORTANCE OF NASAL PLASTIC SURGERY.*

DR. WILLIAM WESLEY CARTER, New York.

In this busy work-a-day world of ours, where transient contacts so frequently produce profound impressions that quickly crystallize into permanent deductions, having the practical importance of established facts, it is not to be wondered at that the possession of a comely nose, correctly proportioned to its facial environment, is regarded as a valuable asset, both from an esthetic and business point of view.

The truth of the old adage, "An inch off the end of a man's nose makes a lot of difference", carries with it today added significance and weight of practical importance.

My long and extensive experience in correcting nasal deformities leads me to believe that a fair portion of the misery of this world is borne by those whose prospects and happiness are blighted by the possession of a misshapened nose. Unfortunately the *reality* of the handicap in either business or society is not affected by the actual conditions as viewed by an outsider. The subjective sensation of inferiority in appearance constitutes the real menace which has wrecked innumerable lives. I have seen many men whose business success has been greatly curtailed, and women driven to the verge of insanity or suicide by the constant feeling of inferiority in the presence of others, because of a nasal deformity that might easily have been corrected long before the idea had become fixed and morbidity established. I have in mind a young married woman with a devoted husband and three splendid children, who developed a very disfiguring nasal deformity following an automobile accident. She soon became morose and refused to leave her home or to come in contact with society. When she was brought to me, her husband stated that she could no longer be trusted with the children and that she was rapidly becoming insane and insisted that something be done at once to relieve her. I found that the correction could be made by the intranasal adjustment of the fractured nasal processes of the superior maxillae and the transplantation of bone and cartilage. This I did with excellent results; within a few months her whole attitude towards life changed, she became perfectly normal and has remained so. Now, this is only one instance, and there are others that could be cited where nasal plastic surgery has assumed the importance of a life-saving procedure.

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Editor's Note: This ms. received in Laryngoscope Office and accepted for publication April 17, 1930.

I may mention this art when applied to the business man: I have on many occasions had men tell me that they were in line for promotion or that they had been promised desirable positions if their personal appearance should be improved by the correction of a nasal disfigurement. I recall one case of outstanding significance, where

Traumatic deformity corrected by intranasal surgery and transposition of tissue.

the expenses of the operation were defrayed by an employer, who recognized the ability of the young man, who was badly handicapped, owing to deformity resulting from a football injury. As I recall my experiences, case after case passes before me where life has been made more satisfactory through the art of nasal plastic surgery.

The esthetic value of rhinoplastic surgery is not all; in fully 75 per cent of these cases there is also nasal obstruction, due either to the crumpling of the septum or collapse of the nasal bridge; this is often relieved at the time the deformity is corrected. In many instances parts of the distorted septum, removed in order to give breathing space, are used in restoring the contour of the nose.

When I speak of plastic surgery of the nose, the impression may be gained that external incisions are made; such is not the case; *all of my work is done from within the nose, thus leaving no external scar.* If, however, the deformity is due to destruction of the organ by trauma or ulceration, rhinoplasty is of necessity our only recourse.

Now, what about the incipient paranoiac? Often even the suggestion coming from a friend, that he has a deformity of the nose, is sufficient to kindle, in the mind of one who is very sensitive, a flame that is not easily extinguishable. Though there may be no foundation in fact for his mental disturbance, the latter is no less real and unfortunate results may follow just the same. The depredations of subjective influences are greatly to be feared, for they are insidious in their approach and morbid ideas may become firmly established before they attract the attention of those who might be able to aid the victim. These cases are no creatures of the imagination; they are real problems, for fixed ideas are not easily eliminated from the mind of a potential paranoiac. I have, however, working in co-operation with a skilled neurologist, succeeded in greatly benefitting the patient by correcting a slight deformity which, to the casual observer, might seem unworthy of the attention of the surgeon. Such operations, as a rule, should be done under a general anesthetic. The psychological effect in cases of this kind are usually beneficial, but, as I have stated, the responsibility should be shared by a competent neurologist, whose opinion should be sought as to whether or not benefit is likely to follow an operative gesture of this kind. Unfortunately many of the patients in this class will immediately become obsessed with an idea of a defect in some other part of the body as soon as his attention has been diverted from the nose. Often our best efforts prove to be fruitless and we are not rewarded for our pains with even the gratitude of either the patient or his friends.

The changing of the shape and size of a nose unsuited to its facial environment, or the modification of accentuated family or racial characteristics, such as are sometimes observable especially in Semitic subjects, is not only a legitimate procedure, but it is frequently of great importance to the individual; I refer especially to those who are ambitious to become stars in the moving picture field;

here the possession of a shapely nose is frequently the deciding factor. In many instances I have found that a change in the shape, size or contour of the organ, so slight that it would not be noticed by the casual observer, has enabled the patient to qualify for the screen. The cinema seems to emphasize the slightest defect in the profile of the nose to such an extent that the subject is unfitted for this work.

The correction of the Semitic type of deformity, usually manifesting itself as a pronounced hump with a hook at the tip, requires something more than the removal of the hump and shortening and raising of the tip; for when the hump is removed, the bridge is left flat and the nose appears broader than it was before the operation: the latter is due to an optical delusion which causes a truncated cone to appear much broader than a perfect cone having the same basal measurements. To obviate this very objectionable effect, it may be necessary to narrow the base of the nasal triangle by bringing the lower extremities of the nasal processes of the superior maxillae closer together after they have been liberated by means of my intranasal chisel. The flattened nasal bridge is narrowed and rounded by means of my moulding forceps after the upper edge of the septum has been reamed.

In the execution of intranasal plastic operations, a practical working knowledge of the surgical landmarks of the part are essential, as well as a clear conception of the structural anatomy of the entire nose.

This work is conducted, to a large extent, under the guidance of the sense of touch, therefore familiarity with this field through the tactile sensation is essential. One must also become so accustomed to the instruments with which he works that they virtually become a part of the fingers. This enables the surgeon to be perfectly aware, at all times during the operation, of the exact location of the point or edge of the instrument he is using.

The preparation for intranasal plastic surgery differs from that in other parts of the body, for, on account of the mucous membrane lining the nose, antisepsis must be delicately adjusted to its complement, asepsis.

The outer surface of the nose and adjacent skin of the face, lips and nasal vestibules are first painted with iodin, followed by alcohol, as in preparation for any other external operation. I protect the mucous membrane from these irritants by plugging the nostrils up to the level of the mucocutaneous junction with sterilized, nonabsorbent cotton, which remains in place during the entire operation, for my incisions are usually made anterior to this.

After the operation begins, I use only sterilized, physiological salt solution. I regard it as most important that the normal secreting function of the nasal mucous membrane shall be preserved, for I am sure that the secretions of this membrane protect against infection. On this account the use of strong antiseptics in the nose do more harm than good, for they injure the mucous membranes.

On account of its abundant blood supply and the local immunity which the tissues apparently have established to the bacteria commonly resident in this area, the nose will submit, without destructive results, to more traumatic insults than any other part of the body. But too much confidence should not be placed by the surgeon in these obvious advantages and scrupulous care should preside over every detail of his operation, lest foreign infection be introduced or lest, for some constitutional cause or other other reason, the anticipated vital resistance of the tissues be found wanting.

In a large percentage of my cases, I employ local anesthesia. I have found a half-and-half mixture of 10 per cent novocain and adrenalin 1-1000 to be satisfactory for local application to the mucous membranes. In those cases where I find it necessary to adjust the bony framework of the nose, deeper anesthesia is required; here I use one-half of 1 per cent novocain hypodermically.

Following the operation the nasal cavities are kept open and the flaps of mucous membrane are retained in their position by means of my gold-wire splints, one of these being placed in each nasal cavity. The great advantage that these splints afford over vaselin gauze packing is that of permitting the patient to breathe through the nose while convalescing from the operation. Furthermore, they permit free drainage and cleansing of the cavities, which is not only an additional safeguard against infection but the comfort of the patient is immeasurably increased. It is the experience of most of us that the patients complain more of the packing usually placed in the nose after operations than they do of the operation itself.

Rest of the part is as necessary for prompt and satisfactory healing here as in any other part of the body. To secure this, I encase the nose, after the operation is completed, in one of my tin-lined copper splints, which is padded with gauze or sheet-lint. This splint is left on, undisturbed for a week or 10 days.

In conclusion, I may safely state that the benefits to the patient from simple plastic operations upon the nose are fully as great as those of minor procedures in any other part of the body, and from a psychological point of view they frequently assume major importance.

2 East 54th Street.

AN INTRODUCTION TO THE REDISCOVERY OF WITTMAACK.*

DR. C. K. GALE, New York.

It seems strange that the necessity exists to present in a clear light the work of a man internationally known, and yet how little understood and misunderstood are the researches of Prof. Wittmaack and his school! This paper is but an introduction to the rediscovery of Wittmaack.

The law of cause and effect is evident. In other fields as, for example, bacteriology, a definite microbe is not given as causative factor for a disease until that disease is produced in vivo (animal), by use of a pure culture of the microbe, and then demonstrated pathologically under the microscope. In otology the great tendency is to acknowledge the effect and theorize as to the cause. Prof. Wittmaack was the first to scientifically attempt to produce in animals a known human effect with known controllable causes. For example, the injection of various substances in the middle ear to produce a labyrinthitis and then to discover the pathology and to note the different stages of development. These animals were killed at various stages, clinically so to speak, and then examined under the microscope. Hundreds and hundreds of such experiments, all controlled histologically and pathologically, are the basis of the Wittmaack theories. If the theories be questioned, as they may be, being individual explanations, the facts produced by these researches are beyond question. To reiterate, the Wittmaack school introduced into otology the new method of experimental pathological and experimental physiological research.

To Clear Up the Question of Technique: The method of tissue preparation in the Wittmaack laboratory follows a certain routine, and is always the same for every specimen. There are no exceptions to this rule. It is impossible for one temporal bone to be treated any differently than another. To discover if there was any possible flaw in this technique, I personally interviewed Prof. Schmorl, the pathologist, of Dresden, who said that the technique in question was simple, well known and good. The fixation solution used was also good.

Before leaving the question of fixation solutions, Dr. Werner experimented over a long period of time with all conceivable combinations and finally came to the conclusion that the potassium bichromate solution, used in the Wittmaack Clinic, was the best.

*Read before the New York Academy of Medicine, Section on Otology, Jan. 10. 1930.
Editor's Note: This ms. received in Laryngoscope Office and accepted for publication March 15, 1930.

The Question of Infarcts: It has been said, on seeing a Wittmaack pathological section under the microscope, "Yes, but that is an infarct." Every tissue that is artifically treated and stained is not the true living picture but an infarct of the same. That must be understood, every microscopical section is an infarct. With experience we learn that normal tissue gives a certain microscopical picture. Deviations from this picture we look upon as various degrees of functional variation or pathological change. Because of the extreme constancy of tissue preparation in the Wittmaack laboratory, various pictures seen under the microscope can only be due to tissue changes and not to technique. Especially when the two labyrinths of the same animal, both prepared at the same time and exactly alike, show different pictures. Furthermore, these tissue changes cannot be produced with animals that have not been treated *in vivo;* they are not therefore postmortal changes. And lastly, these different pictures can be produced at any time with the same known controllable causes upon the living animal. They are not chance accidental findings.

It has always been the standpoint of the Wittmaack School that for the ultimate solution of the labyrinth, those universal laws must be discovered which hold for all species. It does not, therefore, suffice to study mammals and to draw general deductions therefrom. The entire range of life must be gone into and general laws therefrom deduced. Dr. Werner's researches on fish have brought forth many interesting facts which not only coincide with the Wittmaack obseravtions, but help to explain labyrinthine function in general. Through the kindness of Dr. Werner, who has loaned me his personal slides, we see the macula utriculi of the Perca Fluvitiles.

This is presented to demonstrate the ease of labyrinthine research on fish in attempting to ascertain the general laws of labyrinthine physiology. We note here the one large otolith held relatively immovable in position over a definite circumscribed portion of the macula utriculi. It is important to note that the sensory end cells which are covered by the otolith are not nearly as large as those cells not covered by the otolith. The angulation of the macula surface is to be noted. In some fish the macula utriculi has a divided nerve supply. The facts brought out so easily in piscine research and with so much difficulty, if at all, in the higher animals must be explained before we can draw out general deduction as to labyrinthine physiology. The Wittmaack School embodies within its laboratory researches, not only on humans and mammals but throughout the scale of life.

Coming to the works of Professor Wittmaack himself, years would be necessary to really thoroughly study all his researches.

The object of this paper is to touch upon just a few of his works.

OTOSCLEROSIS.

The Wittmaack theory of venous stasis cannot be discarded with a word or a sentence as already refuted or untenable. The other theories as to the etiology of otosclerosis have never been anything else but theories. Wittmaack has been the only one who has produced in the living animal a pathological picture to substantiate his theory. By means of producing a venous stasis in the intracranial veins of the chicken he has produced a pathological bone change, which coincides point for point with the otosclerotic findings in the human. He has not produced a herd formation, which may be due to the different blood distribution in the labyrinthine capsule of the chicken. Prof. Wittmaack does *not* maintain that what he has artificially produced in chickens is the otosclerosis as we know it in humans, but he has produced a picture identical with it, and says, "perhaps." The other theories as to otosclerosis are still purely theoretical as, for example, the hammartome theory. But who knows what a hammartome is? Before leaving this subject, there has been quite a misunderstanding as to the relationship of otosclerosis and the Wittmaack theories of pneumatization. Pneumatization and otosclerosis have no direct connection with one another. It has simply been observed that those cases which show otosclerosis under the microscope usually have good pneumatization of the mastoid.

The only other subject to be touched upon lightly in this paper is that of labyrinthine physiology and tonus; insofar as the vestibular mechanism is involved. The entire labyrinth will be gone into deeply at a later date.

We see in this section the cupulae of the posterior ampullae of the same frog which have been fixed in different solutions. The right cupulla, which has been fixed in a solution of higher molecular weight (potassium bichromate solution), appears shrunken, while the left cupulla, which has been fixed in a solution of low molecular weight (osmic acid), appears expanded.

The two photographs above are the same ampullae cut differently.

This is the basis arrived at from a different angle by Dr. Werner, of the new Wittmaack theories of labyrinthine function.

We hold today that the end cells are stimulated because of pressure of fluid currents or otolith pressure. The hairs are either pushed to one side or another, pressed or pulled upon to stimulate the end cells. We hold that the cupulla is a dead substance.

Our first discovery that the cupulla can contract or expand, according to the molecular weight of the fixation solution used, shows that the cupulla is not a dead substance but is capable of responding to differences of osmotic and hydrostatic pressure between itself and the endolymph. The cupulla changes cannot be produced in the labyrinth if the animal is allowed to wait until postmortal alterations have resulted.

And so our first new conception is arrived at, namely, that the cupulla is not a dead substance, incapable of any change, but does react to changes in osmotic and hydrostatic pressure.

The next photograph is that of the maculae utriculi of the Gobius, a sea fish, in which the otolith by rotation has been removed from its macula surface. Three weeks later the fish was killed and the labyrinth put into fixation solution.

On the left we notice the normal macula. On the right, the macula of the fish experimented upon. Both enlarged the same degree. We see at once that the macula of the fish experimented upon is expanded. If the otolith acted purely to press upon the basis of the sensory cells we could not expect this type of reaction. Because of the purpose of this paper, details of cell structure are not gone into.

Wittmaack has also shown that raising the hydrostatic pressure in the labyrinth causes the sensory end cells to be pressed together, and oppositely by opening of the endolymph space the hydrostatic pressure is reduced and the sensory end cells expand.

If the hydrostatic pressure be increased on one side we get nystagmus to that side, and if the pressure be reduced on one side we get nystagmus to the opposite side.

Thus if an animal be rotated, and during rotation killed, the cupulla on later histological section does not show itself bent to one side or the other but shows contraction by ampullopetal endolymph flow and expansion by ampullafugal flow.

And so other forms, as caloric, galvanic and chemical stimulation, produce volume differences in the sensory end cells and cupullae. With galvanism the cathode pole gives contraction, the anode, expansion. Thus we find that the sensory end cells receive their physiological stimulation through expansion and contraction of the cupullae and maculae, which, in turn, is the effect of changes in hydrostatic pressure. These results can be produced experimentally upon animals at will.

I have just touched upon this subject as one of the phases of the Wittmaack researches.

In conclusion, I wish to state once again that the Wittmaack researches are living vital forces in the field of otology.

225 West 86th Street.

SOME UNCOMMON TYPES OF NEOPLASMS ABOUT THE HEAD.*

DR. JOSEPH C. BECK, Chicago.

Introductory: In reviewing the recently published System by Denker-Kahler, Handbuch der Hals, Nasen und Ohrenheilkunde, Vol. V, I find such a vast amount of material, even of cases that I am about to report, that I ask myself whether it is worth while to add more material, and whether the term "uncommon" is well chosen. However, since these conditions have been very rarely seen by myself, and also quite rarely reported in American Literature, I feel I have no apologies to make in presenting them, and perhaps from the discussion we may learn something, if not new at least practical.

One of the conditions I am reporting is still very rarely observed in the Oto-laryngological field, and that is Myeloma, in which the sinuses or the nose or the temporal bone is involved. I desire to report on cases of: *1.* Osteoidoma of the frontal sinus. *2.* Myeloma multiplex involving the antrum of Highmore. *3.* Mixed tumor of the intrapalatal type.

Since these individual pathologic entities would not be easily accessible in the literature, in fact entirely overlooked under the title of this paper, I shall terminate it here by saying that each of the above conditions will be reported on under a separate title.

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*Read before Middle Section, American Laryn., Rhinol. and Otol. Society, Rochester, Minn., Jan. 21, 1930.

Editor's Note: This ms. received in Laryngoscope Office and accepted for publication March 21, 1930.

OSTEOIDOMA OF THE FRONTAL SINUS.

Adolph Eckert-Moebius in Denker-Kahler System is undoubtedly the last word on this disease, and on page 118, in Vol. V., he records 276 cases of all parts of the nose and sinuses, which he treats as follows:

He divides them: *1. Location.* *1.* External nose, 20 cases; *2.* doubtful location, 35 cases; *3.* ext. or intranasal, 34 cases; *4.* frontal sinus, 113 cases; *5.* ethmoid cells, 56 cases; *6.* antrum of Highmore, 13 cases; *7.* sphenoid sinus, 7 cases.

Many times these tumors involve more than one sinus and the tumors themselves may be *multiple*. Their place of *origin* is not easily determined, especially after the growth has reached a larger size.

2. Sex, 180 cases—110 male, 70 female.

3. Age, 163 cases.

Decades: I, 0; II, 31; III, 71; IV, 31; V, 14; VI, 10; VII, 5; VIII, 1.

4. Rapidity of Growth is usually slow but in younger individuals the growing of the tumor is more rapid. Trauma makes growth more active. *Giant Osteomas:* In the olden days these were much more common. One is reported to have weighed 587 gm. and measured 17x9 c.m. The reason these growths were permitted to develop these giant formations in former times was due to the fact that they were considered inoperable. The patients always died from the operation. *Dead Osteomas:* Spontaneously they may become extruded when small or remain as a foreign body when large.

5. Associated Chronic Suppurative Sinusitis: This is very common and acute attacks are fraught with great danger on account of brain abscess or meningitis developing as a complication.

6. Pathology—Gross Pathology: The tumors may be irregular; sessile; pedunculated; hard or semifirm. *Microscopic Pathology:* *1.* Hard, well developed bone. *2.* Spongified bone. *3.* Mixed. *4.* Connective tissue bands. *5.* Epithelial surface.

7. Symptoms: *1.* Appearance of the growth. *2.* Displaced eyeball. *3.* Nasal obstruction. *4.* Pain, or rather ache, which may be slight and local, but if pressing on some larger nerve trunk the pain is very severe.

8. Diagnosis: X-ray is so positive that it is comparatively easy. Puncture differentiates it from other tumors, cysts or mucocele. Watch out for luetic growths, which have been mistaken for osteoma, the so-called luetic osteophytic neoplasms.

9. Treatment: Cases not operated have a mortality of 48 per cent due to complications. In other words, patients having osteomata, with the exception of the rare occurrence of spontaneous death and extrusion, must be operated radically. There are cases, especially about vital parts of the body, that can be only partially removed.

Operations: 1. Killian's method; *2.* Kuhnt method; *3.* Moure method; *4.* Denker method.

Sphenoid osteomas are, as a rule, inoperable, owing to danger of brain involvement or injuries to the internal cartoid artery and the cavernous sinus.

10. Complications: Complications occur especially from radical operations. *a.* Injuries to large blood vessels. *b.* Meningitis. *c.* Brain abscess. *d.* Optic nerve atrophy. *e.* Loss of eyeball. *f.* Deformity.

Case Report: Mr. I. D., age 49 years, for the past seven years noticed a growth in the left corner of his eye. It has grown slowly and has been hard to the touch most of the time. He was sent to the doctor to rule out possible malignancy. He has no other symtoms.

Examination: An oval growth in the left Ewing's triangle protruding about one-fourth inch. It is firm to the touch. There is no interference with motion of the eyeball, nor is there any displacement of same. Vision is 20/20. The ears, nose and throat are negative and X-ray shows density of the greater part of the left frontal sinus and part of the right. The Wassermann report is negative.

Operation: Under local infiltration both frontal sinuses were exposed. The periosteum peeled off easily. By means of the electric burr the cortex was taken off. It was very thin and we came upon the tumor, which had no epithelial covering and there was very little bleeding. It appeared to be made up of soft bone. Opening the right frontal sinus, I found the growth reached into it for about 2 c.m. There was some thick material within the sinus, which did not appear to be pus, but rather like whitish flakes of debris. Portions of this material, as well as particles of the soft bone, were sent to the laboratory for bacterial and microscopic examination. The entire mass was removed by carefully burring it away until I reached hard bone, which I took to be the inner table of the sinuses. All the mucous membrane was removed from the right frontal sinus, the cavity was loosely packed with gauze and closed, except at either extremity of the incision. Two days later the cavity was injected with bismuth paste and within a week it was healed. It has remained so ever since, now two years past.

The lateral X-ray (Fig. 1) shows the extent of filling by the bismuth paste.

Recent inquiry of the doctor states it is still healed and the patient is well (Fig. 2).

Report of the Pathologist, Dr. Pilot, Microscopic (Fig. 3): The greater part of the tumor mass is made up of osteoid tissue with

Fig. 1. Osteoidoma of the frontal sinus.

true bone tissue at the periphery. The osteoid element is represented by irregular islands of variable size, and are made of poorly formed concentric rings with no nuclear or cellular structure. The intervening tissue is largely a spindle cell stroma containing a moderate number of blood vessels. These vessels have thin walls and are distended with red cells. At the periphery are the larger anastomosing structures of distinct bone tissue, with lacunae containing indented nuclei. The connecting tissue in this region appear looser and contains more blood vessels and capillaries. The nuclei are regular and reveal no mitoses.

The bacteriologic examination is of no additional value.

Comments: The term osteoidoma in contra-distinction to osteoma is applied purely from the pathologic point of view. I believe if one had the opportunity to study a larger number of cases by the aid

Fig. 2. Osteoidoma of the frontal sinus.

Fig. 3. Osteoidoma of the frontal sinus.

of the X-ray, one could make this diagnosis before operation. Surely from the surgical standpoint it makes a great deal of difference in the removal of this soft material compared to the ivory-hard osteomas. Many a case of osteoma is found accidentally, especially in the beginning, while having pictures made for all sorts of other conditions.

MULTIPLE MYELOMA.

S. Isaacs, of Frankfurt, Germany, reviewed the entire literature up to 1914 and published a very comprehensive article on the subject with literature references in the "Beiträge zür Klinischen Chirurgie" of 1915. He summarizes as follows:

1. That the disease occurs in various places of the body, such as the ribs, sternum, extremities, flat bones of the skull, vertebra, and also in the viscera, perhaps metastatically.

2. That it is a disease of insidious outset and slow progress.

3. That the X-ray picture is often the first evidence in the diagnosis.

4. That these multiple growths show a specific pathology, especially microscopically, although there being five varieties classified. (Described later.)

5. A specific test of the urine, namely, the Bence-Jones, of albumin. (More data later.)

6. The cause is not known and the termination is always fatal. It is a disease of middle and older period of life.

Since Isaac's publication there has been added quite a few new and important ideas as to etiology, diagnosis and treatment.

Gesichter (C. E.) and Copeland (M. M.) have again reviewed the literature and published their work in the Archives of Surgery, Vol. 16, April, 1928. Their 14 cases from John Hopkins occurred between the ages of 40 to 70 years, twice as frequently in male. The main symptoms were pain of a rheumatic nature and before the pain the tumors were noted. Most of the cases had a faulty diagnosis of chronic nephritis made at first, but since nothing but albumin without any casts was found, they recognized myelomata. (Bence-Jones test.) The urine is heated and will throw down the albumin and on further boiling will redissolve the albumin. They have seen as a consequence of the growth of tumor, especially in long bones, spontaneous fractures occur. The biopsy clinches the diagnosis and will show round or oval egg-shaped cells, 9-11 micromes in size, the nucleus situated eccentrically. At times a cell may have two or three nuclei and each nucleus had a nucleolus. Spoke-like arrangement of chromatin at the periphery of the nucleus is seen.

Woods (F. C.) in Nelsons' loose leaf Surgery, Vol. II, page, 57, makes a histologic classification as follows: *1.* Myelocytes; *2.* myeloblast; *3.* lymphocytes; *4.* nucleated reds; *5.* plasma cell types. He says any or all of these may occur in a case and they destroy the bone by invading the bone marrow.

Ewing's Neoplastic Diseases, 3rd Edition, says of the variety of cells that make up the tumor are plasma cells and their derivatives.

From the Mayo Clinic come several reports, especially by Meyerding (H. W.), Vol. XVI, 1924, page 81, and the X-ray work is especially stressed in the diagnosis.

Waltman Walters, from the Mayo Clinic, reports particularly from the standpoint of the Bence-Jones test.

As to the occurrence of myelomata in the field of an otolaryngologist, or even in the borderlines of the same, the reference in the literature is very scarce.

Schultz (H.) in the Archives für Klinische Medicin, 113 and 441, in 1914 reports a case of multiple myeloma with positive Bence-Jones test of albumin with metastases into the right tonsil.

Beattie and Dickson pathology, 3rd Edition, 1926, page 294, speaks of multiple myelomata occurring in the upper and lower jaw (Myeloid Epulis), but from the discussion of his work I think he is speaking more of myeloid sarcomata, which they themselves describe.

Adolph Eckert-Moebius, of Halle, in Denker Kahler system, Vol. V, page 162, describes these specific types of tumors occuring in and about the nose and throat in connection with lesions everywhere in the body. The references are so few that I believe it will be well to cite them somewhat in detail. The terminology is also varied somewhat, in that the authors refer to them as plasmocytoma, or myelocytoma, depending upon the preponderance of the cellular elements.

Schriddle: Zentralblatt der Pathol., 16-432, 1905: Plasmocystoma of the nasal cavity in a man age 40 years with detail nasal findings.

Hajek: Passow Schaeffers Beitrag, 23-465, 1926: Two types of tumor of the frontal sinus and ethmoid labyrinth in the same individual. The histopathology was that of a plasma type of myeloma.

Wachter: Archives of Laryngology, 28-69, 1914: A case of multiple plasmocystoma of the upper air passages. The clinical course of this case is so different from the multpile myeloma of the bones of the body that there is a question in my mind as to whether it does not belong to some other form of neoplasm. Eighteen years previously the patient had masses of tumors removed. There is no mention of the albumin test of Bence-Jones and the patient did not, evidently, die from this affection.

Oppikofer in Passow-Schaeffers Beitrage, 23, 1926: Reports a case which, following an operation, came to a fatal termination from sepsis. A complete postmortem examination was made and very extensive involvement by this plasmocytous tumor was present. The

whole nasal cavity and accessory cavities were involved and it invaded the clivus. The parietal bone, sternum, ribs and the vertebrae were affected. The glands and velum also had masses present, without the mucous membrane being thickened. The vault of the pharynx, as also the posterior wall, had masses present, which they attempted to remove by a Gottstein curette, but in this they were un-

Fig. 1. Multiple myeloma—upper and lower jaw.

successful. This case occured in a 54-year-old man and the growth reached its maximum in 1½ years. The complaints were difficulty of nasal respiration and swelling of the glands in the neck.

Wagget, London Laryngological Society, 1902: Reported a case of a woman, age 30 years, who during the past six months had nasal blockage and nasal bleeding. Examination showed right-sided ptosis,

a tumor, smooth, but which bled very easily, apparently arising from the right middle turbinate body. The right side of the nose was completely blocked. He operated by the external route and succeeded in its complete extirpation, with complete recovery. Gross-

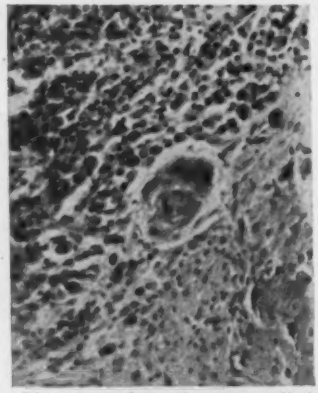

Fig. 2. Plasma-myeloma in mass cell formation.

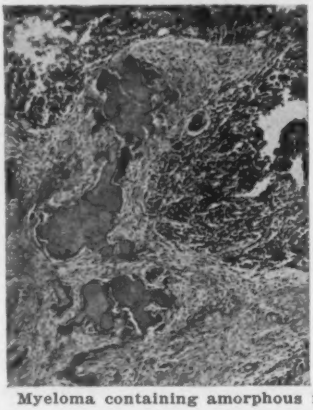

Fig. 3. Myeloma containing amorphous masses.

ly, it was a deep red tumor, and microscopically it had the characteristics of a myeloma with many giant cells.

None of the above referred cases correspond to my case, which I am about to describe and I feel that we are, perhaps, still talking of different pathologic entities.

Mrs. E. W., age 53 years. I first saw this patient in August, 1928. She had a tumor on the left side of her face, the size of a hen's egg, protruding into the oral cavity, as well as on the outside. (She refused to be photographed.) The tumor was firm to the touch and not painful. It had been present for 1½ years, growing slowly and causing no trouble. She stated it started to grow when she had a tooth extracted from the lower jaw on the left side. X-ray showed a marked absorption of the lower jaw (Fig. 1). Operation was

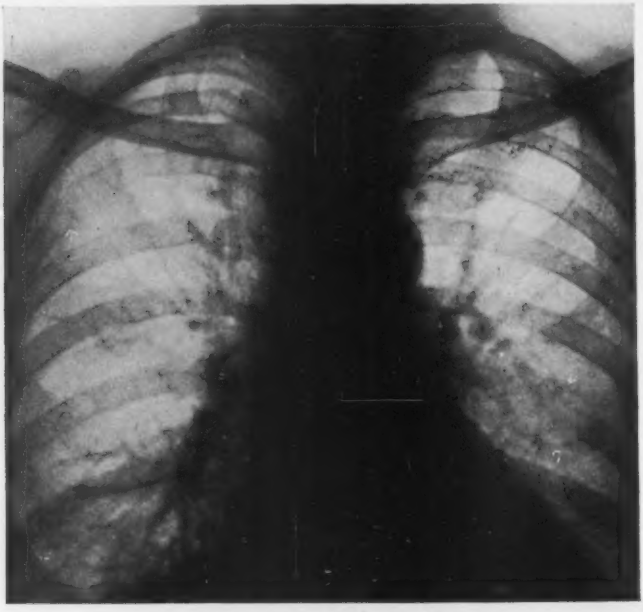

Fig. 4. Myelomata of ribs.

advised and performed in February, 1929. The delay was due to the fact that the patient wanted to try X-ray therapy, which did not influence the growth at all.

Operation: An external incision was made parallel with the lower margin of the mandible and the tumor exposed. It was bony in character, easily entered by means of a gouge and was found to be made up of a soft, somewhat granulating-like mass. The greater portion of the soft bony part of the tumor was removed and the cavity thoroughly curetted. (Part of this material was sent to the

laboratory for microscopic examination.) The cavity was loosely filled with gauze and the wound partially closed by a suture. There was very little trouble following this operation.

Pathologist's Report, Dr. Pilot: Microscopic Report: The tissue consists of cellular masses surrounded by fibrous tissue in which lie irregular amorphous pink and purplish staining masses, the cells are predominatingly polynuclear leukocytes and a rare eosinophile The connective tissue is rather loose, made up of many fibroblasts

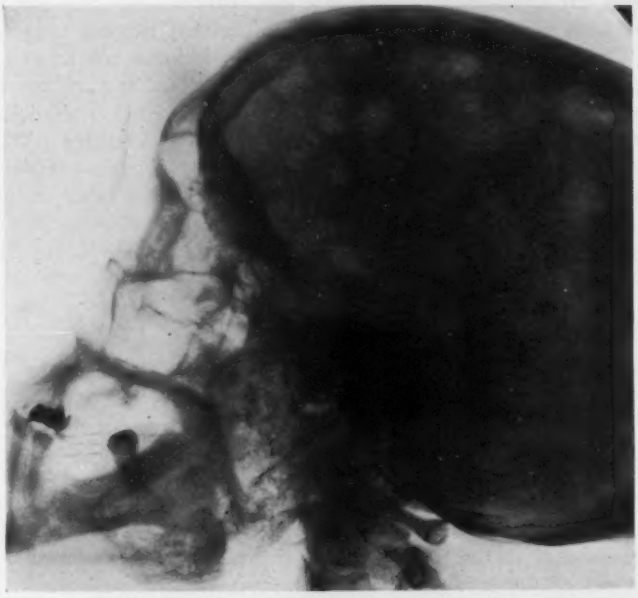

Fig. 5. Myelomata of skull.

and bundles of spindle cells with collagen fibres. The irregular staining masses appear homogenous and are devoid of cellular elements, occasionally in the vicinity is a giant cell of the foreign body type. The appearance is suggestive of a plasma cell type of myeloma, but the picture is complicated by these peculiar amorphous masses and a low-grade inflammatory reaction (Figs. 2 and 3).

The report of the pathologist, Dr. Pilot, was most distressing, in that he said he could not tell just what type of tumor it was, nor did the consultant pathologist, Professor Jaffe. It was these masses in

the plasma cells and some giant cells that were confusing them. The wound refused to heal until September, 1929. In the meantime the patient was losing ground, having pains in the chest and abdomen, losing weight and was anemic in appearance. She was referred to an internist, who, in April, 1929, suspected from the urine examination which he made, namely, great quantities of albumin and no cellular elements (Bence-Jones test), that the patient had myeloma and now more X-rays of the chest (Fig. 4), skull (Fig. 5) and extremities were made and showed the typical multiple bony lesions. Now the pathologists agreed that the histopathology was that of myeloma of the plasma cell type, with probably amyloid masses.

The patient has steadily grown weaker, losing much in weight.

Final Note: On a recent visit to Memphis, Tenn., where the patient now resides, I found her unable to rise, due to her physician's fear of spontaneous fractures, especially of the vertebrae. While there is considerable emaciation, the patient's only two complaints are persistent nausea and insomnia. There are no other findings except the marked albuminuria without any cellular elements, yet the reaction was not that of the Bence-Jones test. More boiling does not dissolve the albumin.

INTRAPALATAL MIXED TUMOR.

In the Transactions of the American Laryngological Association for 1929, Robert Sonnenschein, of Chicago, reports on two cases, one of his own and one of his associate's, Prof. S. J. Pearlman. He further reviews the literature up to that time and states that mixed tumors of the soft palate are comparatively rare, well within 50 cases. He refers to the work of recent date of Prof. Eggers, Arch. Pathol., VI, 378, 1928, who made a study of five cases from the pathologic viewpoint (one of these five cases belongs to the writer and is herewith reported).

Mr. K. S., age 27 years, had his tonsils removed at the age of 19 years. One year later he noticed a swelling on the right side of his throat, which he felt with his finger was firm and not painful. This growth grew very slowly, interfering somewhat with his voice. Examination showed a firm growth on the right side of the soft palate (intrapalatal) (Fig. 1). It was firm to the touch and slightly movable.

It extended into the supertonsillar region and postnasal space. The opening of the Eustachian tube could not be made out, but there was no finding referable to the ear. The absence of referred pain was most unusual. A biopsy was made on July 25, 1927, and proved to be a myxofibro-chondroma. Shortly after this operation for the enucleation was undertaken and an incision was made parallel with the fibres of the soft palate and the growth enucleated in its entirety. There was very little bleeding during or after the procedure. The cavity was loosely packed with gauze and the greater portion of the incision was united. The growth was irregular in outline and ap-

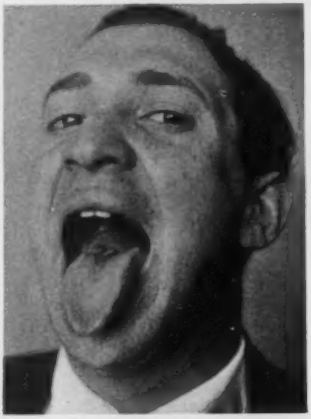

Fig. 1. Intrapalatal mixed tumor.

parently did not have a capsule. On section it was firm and pinkish white in appearance.

The gauze was removed the next day and the throat appeared healed in less than a week, with very little reaction. Three weeks later a recurrence was noticed and at the end of five weeks the tumor appeared as large as before operation. At this time he was presented before the Chicago Laryngological and Otological Society. The following week, under rectal synergestic anesthesia, he was re-operated on and at this time an attempt was made to take away the tumor with its capsule. However, there was none distinguishable.

Since this man was studying law and any permanent defect in the soft palate would unquestionably produce a laliac voice and handicap him for his profession, the parts were treated most conservatively.

This time the cavity was electro-coagulated lightly and a thorough swabbing with full strength Tr. of iodin. No packing was employed and the wound was left open. Infection or suppuration occurred and retention was present for several days. The pus was always removed by cannular suction. The bacteriological examination of the pus was mixed, particularly staphylococci. There resulted complete healing with perfect restitution of the soft palate and normal voice. This all occurred about two years ago.

Pathologist's Report, Dr. Pilot: Microscopic examination was as follows: The tissue is made up of numerous endothelial channels in a stroma of variable appearance. The channels are irregular, dis-

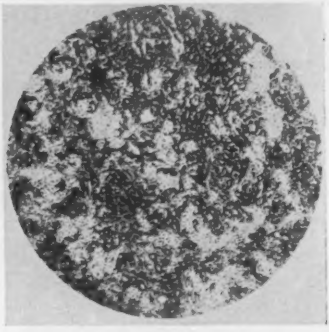

Fig. 2. Mixed tumor—intrapalatal.

torted, devoid of cellular contents and lined by a modified endothelium, often cuboidal in places. The stroma is mostly made up of connective tissue with variable amount of collagen fibres. Many areas reveal definite lacunae containing cells stimulating cartilage. Other places appear myxomatous. Nuclei are regular mitoses, infrequent. The appearance is that of mixed tumor (Fig. 2).

Comments: I believe that if the recurrence in the first place was due to the remains of the capsule and not, as Dr. Sonnenschein intimates in his discussion of his paper, due to incomplete removal of the growth, that following the second operation the electro-coagulation, secondary infection and possibly the reaction due to strong iodin solution, the capsule was destroyed and atresia resulted.

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RADIOTHERAPY IN DISEASES OF THE EYE, EAR, NOSE AND THROAT.*

DR. ERNST A. MAY, Newark, N. J.

The practice of using radium and deep X-ray is recent. Its administration, like every new method, still is empiric. As the time of discovery, it had been hoped that there would be a specific remedy for cancer, but disappointment followed the overenthusiasm. A few good results, together with a great number of failures, heavy tissue reactions and severe suffering were seen.

The physical and biological power of this new agent was unknown and is still not fully comprehended, and the few beneficial results were more or less haphazardly obtained. Duplications were easily turned into complete failures by small overdoses or improper application.

I might compare this with the time when surgery was in its infancy, and when Mikulicz published his first results of operations for perforated gastric ulcer. Of the cases on which he performed operations, all but one died; but this one that lived would have been dead at the time of the publication had he not been operated.

The one case saved was to the credit of the method, and those which died were not to the discredit of the method. Today radiotherapy has proven its worth in the treatment of not alone the inoperable cases, which surgery is unable to take care of and which are bound to die, but also in numerous conditions in which it has enabled surgery to adjust its own methods, or even to leave the cases to be treated by radiotherapy alone.

It is really not quite fair to compare, at the present time, the actual value of radiotherapy with the value of surgery and I doubt whether this should ever be undertaken. The two methods are no competitors to each other; they belong together, and from this point of view we should estimate their worth.

There is another thing to be said to the credit of radiotherapy and this is, it has advanced the study and knowledge of cancer considerably.

Cancer is not a single disease. It is now recognized as a large group of diseases which are closely allied, but are absolutely different in their individual characteristics.

*Read at the meeting of the Section of Eye, Ear, Nose and Throat at the Academy of Medicine of Northern New Jersey, Newark, N. J., Oct. 14, 1929.

Editor's Note—This ms. received in Laryngoscope Office and accepted for publication Feb. 8, 1930.

The study of effect of radiation on new growth has brought more light in the conception of cancer and has even detected several new groups by the grade of the reaction to the rays. There is a law that the more differentiated in its structure a growth is, the less can it be influenced by radiation, and the more its structures approach the embryonic type, the better will be the response to radiation.

We can thus, through better histological classification, improve on the prognosis of the case and draw conclusions as to what can be expected from radiotherapy.

In hopeless cases it is valuable as a palliative agent. It relieves or prevents pain and arrests or prevents bleeding and discharges. There is considerable difference in the employment of radium and X-ray for palliative or curative purposes, as in the latter the intensity of radiation is higher, and approaches more in similarity the importance and severity of a major operation.

The Effect of Radium and X-rays: I am convinced, and I am not alone in expressing this opinion, that in the first place, we must expect results in attacking the cancer with radiation from the direct action of the rays on the tumor. The reaction of the tumor bed and of the body is also important but secondary. We can only expect results by sending extremely high doses to the tumor.

It must be borne in mind that from the dangers which may arise from an overdose on normal tissue, the disease itself is the greatest.

If, for instance, in the case of carcinoma of the antrum the floor of the orbit is invaded, we must sacrifice the eyeball if necessary in order to obtain better access to the growth, for whenever a particle of the tumor is left alive, we shall have a recurrence and death may be the result.

Radiotherapy, on the other hand, enables us in operable cases to be more conservative in our surgical procedures.

We may be able to save a larynx with the combination of surgery and radiotherapy in cases in which the surgeon would perform a laryngectomy. This emphasizes the importance of co-operation.

Radiation can never be a competitor of surgery. In the combined use of both of them lies the possibility of attacking cancer successfully and getting closer to the solution of the cancer problem.

Whether radium or X-ray should be employed depends upon the individual case. X-rays are used for external radiation when heavy doses should be given. When small amounts of radium are on hand, X-rays are always preferable to the radium, as a good dose of X-ray is better than a poor dose of radium.

Radium is excellent in localized surface application, in introduction into body cavities, and in direct implantation in tissues.

Pre- and Postoperative Treatment: There is distinct advantage in most cases by giving them a *preoperative* treatment. By weakening the cells of the growth, it adds to the safety of the operation to follow and tends to prevent distant metastasizing. The treatment should not exceed a skin unit dose and must be given within one to three days. Any operation should follow right after it to avoid the difficulties which arise through the fibrosis and other action of the rays on the tissue.

Some of the bulky growths may be reduced in size, the drainage of cavities made easier and, therefore, possible present inflammatory conditions will be reduced. This will render the surgical procedure simpler and tend to a better permanent result.

It is most important to heal the infection before attacking the growth as an infected growth will respond to radiation to a far less extent. Any inflammation is bound to increase the malignancy of a tumor and make it more resistant to treatment. Lues will invariably darken the prognosis in cancer.

Preoperative radiation is also of great value when attacking metastatic involvement of the regional glands, as, for instance, on the neck. It may render borderline cases and inoperable cases operable, thus enabling the surgeon to perform an eradicating operation.

As stated above, in the postoperative treatment and in operable cases the *dosage* to be given must always be *adapted to the individual case;* however, *nothing should be expected from small doses.* I even go so far as to say that unless from five to seven erythema doses are applied to the tumor uniform results shall not be seen.

This dose must be given within a certain space of time, as, for instance, two weeks, and should be evenly divided. A treatment extended over too long a period of time is less effective. The whole amount given within one or a few days will tend to undesired accompanying effects and weaken the general resistance of the patient too much.

In the dosage spread over two weeks the best results can be seen. Whether this is due to the possibility of the rays striking all the cells in their course of mitosis is not known. The administration of such high dosage makes it necessary that as much of the normal tissue must be spared of the radiation as is possible. This can best be done by making a plan of treatment and calculating the exact dose of X-ray and radium radiation on every single part of the tumor, as well as the surrounding tissue.

Endothermia: I would like to mention another assistant; the use of the *endothermic knife* at operations instead of the knife. This is nothing more than a different method of cauterization, but it has great advantages, and even when extensively used leaves only a small scar. Then, too, tissue heals very readily.

Bulky tumors can be taken out with great ease and without much bleeding. While going through the tissue the heat of the needle will sterilize the tissue and seal the vessels and lymphatics and diminish the danger that parts of the growth may be carried to distant places in the body. Dan Mackenzie says, in speaking of surgical diathermy, it prevents the operator squeezing life cancer cells into the lymphatic vessels draining these affected areas. It also prevents the sewing of the operation field with living cancer cells. It also destroys the bacteria of sepsis in the tissue adjoining the field of operation.

Epithelioma: The best results in the treatment of surface lesions, *epithelioma of the skin,* can be obtained by either radium or X-ray. Unless the bony or cartilaginous structures have been invaded, the lesions can be expected to be healed with high percentage of certainty. However, care should be exercised even in these light cases of basal cell carcinoma.

Unskillfully given X-ray or radium treatment will heal the lesion on the surface while the malignancy will progress in the deeper tissues to a point where it becomes beyond control.

Squamous cell carcinoma offers considerably more difficulty to treatment and the dose must be very much heavier than that of basal cell carcinoma and must include regional lymph node drainage area.

Of the lesions involving the structures of the *eye,* that of epithelioma of the *eyelid* and *canthus* is most frequent. It heals readily under treatment, equal to that of skin epithelioma. Care should be taken that the conjunctiva of the eye is protected in order to avoid severe reactions.

Epithelioma of the *ocular conjunctiva* is rare. It responds very well to radiation. The lesion will heal without scarring and, therefore, radiation is preferable to surgery. An operation when adequately done will always leave a more or less undesirable scar.

I have two cases of epithelioma of the cornea treated by X-ray and radium application and free from recurrence for more than three years. There is comparatively little danger of injuring the eye when doses are given carefully. The eyeball is not as radiosensitive as might be expected. Average doses may cause blepharitis

or conjunctiva, or even keratitis, but only extremely high doses will result in necrosis of the orbita or the bulbus.

Of the *retrobulbar tumors,* the lymphoma and lymphosarcomas show good results; however, if the initial external radiation should not result in prompt regression of the growth, the bulbus should be removed in order to gain more knowledge of the growth and to have better access to the growth.

In order to conclude the subject of usefulness of radiation in diseases of the eye, I might mention that X-ray and radium, as well as ultraviolet radiation, are helpful in treating tuberculous lesions, as *lupus* and *tuberculosis* of the *conjunctiva, iris* or *choroid.*

A number of cures of trachoma and vernal catarrh have been reported; however, my experience with these cases has been very small.

Intraoral Cancer: Nevi or *hemangiomas* in the region of the eye yield excellent results by radium or X-ray treatment.

Of malignancies in the intraoral group, *cancer of the lip* is the most conspicuous one and the patients come relatively early for treatment. They may either be basal cell epitheliomas or squamous cell or epidermoid carcinomas. The basal cell carcinomas originate on the skin and extend over the lip and, therefore, are not really a true lesion of the lip.

The epidermoid is of two types, the superficial papillary and the deep infiltrating type. Their prognosis as well as their histology and clinical appearance are considerably different. The superficial epidermoid is very conspicuous, reaching over a larger area but not extending into the deeper tissue in the early stage. Metastases are very rare unless the disease has progressed into the deeper structures. This type, as well as the basal cell epidermoid, gives very good results after treatment with radiation.

One should refrain from making a section as the clinical appearance of the case and the individual type is very striking and a section will break down the wall of protecting lymphocytes which is formed around the lesion and might open channels of dissemination.

The type of squamous cell epidermoid has raised indurated edges with formation of sloughing in the middle. One can feel by palpation that the deeper structures are invaded. It disseminates much more readily and invades the cervical lymph nodes early.

There is a difference of opinion as to whether complete dissection of the neck should be done not only in these cases but also in all malignancies of the intraoral group. First of all, the histological aspect of the growth should be considered; papillary growth causes

metastases only very late, although, it might involve a large area of superficial tissue. There are many factors which speak against an early neck dissection as a regular procedure.

The original lymph nodes perform a certain function; they are there to arrest the progress of the disease. If they are taken out unnecessarily we are taking away a barrier against the spreading of the disease which the fibrosis produced by the dissection cannot substitute.

In primary lesions the cervical lymph nodes regions are radiated in addition to the primary growth. Cases without palpable nodes should be kept under observation. If nodes are present or appear later a complete unilateral section with the use of radium emanations buried through the wound should be done. Dissection of the opposite side may be performed if indicated. While this opinion is expressed by Quick, of New York, and Holmgren of Sweden, Mackenzie, of England, performs a block dissection in every case of intraoral cancer. No matter how early the case is, he believes that the lymph glands have only little power to arrest the spreading of cancer.

Regaud reports a case of 60 out of 90 cases of from one to five years' duration in cancer of the lip. Quick reports 69 cases out of 202 cases have been free from the disease for three years. My own results have been such that of the 14 cases I have treated during the last seven years, eight are free from the disease, two are improved and four have died.

Before treating any malignancy in the intraoral cavity, a *general mouth hygiene* should be given to the patient. Bad teeth should be extracted, but care should be exercised in case of malignant involvement of the jaw. In this case they should only be extracted after the first course of treatments. The presence of local or general infection in the mouth will complicate the entire picture and darken the prognosis.

There are only a few cases of basal cell carcinoma or lymphosarcoma which occur in the mouth. The others are carcinomas of the epidermoid type.

The reason for these epidermoid carcinomatas differing so widely in their response to radiation is that there are numerous types of differentiation. The higher the growth is differentiated, the less malignant it is, but the more it will resist any kind of radiation treatment, and the better will be the prognosis from the surgical standpoint alone. However, as the structures approach a more embryonal type the influence of radiation is more marked and the

results are better, while the results of surgery will become poorer. Brodess has suggested that the epidermoid carcinoma be classified into four groups, and treated accordingly. The disease is a very dangerous one, although the ulcer might not be very conspicuous. *Epidermoid carcinoma of the cheek* penetrates usually very early into the deeper structures of the cheek and of the masseter muscle and causes trismus of the jaw, so that it will be difficult to approach the lesion. These appear to be of higher malignancy than any other of the intraoral group.

In case of involvement of the jaw the case should also be treated as if there was a primary lesion of the jaw. The bone should be removed surgically far into the healthy tissue.

Only in a case of highly embryonal type external radiation alone will give satisfactory results. For the more differentiated types it is most necessary to use all the auxiliaries of radium and X-ray and electrocoagulation to produce satisfactory results. The results are poor as recurrences occur very frequently and are very difficult to heal.

The difficulties are similar when treating *cancer* of the *tongue*. More than 70 per cent come in inoperable condition. As the tongue is supplied with rich vascular and lymphatic system and moves almost constantly, a growth has already disseminated in the early stage.

Many cases appear still operable as far as the primary lesion is concerned but have disseminated so widely that they are inoperable from this point of view.

Best results have been shown by surgery alone only in the early cases of carcinoma located on the tip of the tongue.

Today the early lesion is attacked with a wide excision with the diathermy knife. Either radium element needles are then inserted in the field or emanation. Seeds from one to three m.c. filtered with gold are evenly distributed in the tissue, one seed to one sq. c.m.

This application spreads the action of the radium over a period of 31 days with the strength of radium diminishing about 15 per cent every day. Surface application can only be used in cases of leukoplakia and very mild basal cell carcinomas and is of no use in infiltrating cancer.

The patient will undergo a heavy reaction with considerable swelling and pain, but this cannot be avoided and must be gone through.

The employment of gold filtered seeds has considerably lessened the suffering to patients from the result of implanting the bare glass seeds.

To keep the inflammatory reaction in check, painstaking care must be exercised in the mouth hygiene, and in keeping the general physical condition of the patient at its best during this acute stage.

Whether or not dissemination has already taken place, the radium dose is assisted by heavy external X-ray over the entire lymphatic regions. Dissection of the neck is done when indicated.

As to results, Quick reports 101 cases, operable and inoperable, are free after two to three years, out of 450 in total, and he believes the net percentage in this group is about 22.3 per cent. This will compare very favorably with the best surgical statistics in operable cases alone. While 35 per cent of the cases treated at the Memorial Hospital were operable, 50 per cent were inoperable, and 15 per cent just beyond operability.

I have treated 13 cases that were all inoperable. Nine died, two are much improved, one is free from the disease for more than a year. One has now returned with a recurrence after being free from the disease for more than five years.

While in malignant tumors of the tongue, the appearance of a sarcoma is rare, we do find some cases of sarcoma in malignancy of the *tonsils*.

In spite of the early symptoms of difficulty in swallowing, a patient with malignancy of the tonsils comes comparatively late for treatment. In some cases valuable time is lost with various other treatments for tonsillary ulcer or antisyphilitic treatment.

Lymphosarcoma is very frequently found in cases among the younger generation. The other cases are either epidermoid carcinoma or lymphoepithelioma. As most of these cases come to the proper place for treatment in advanced condition, surgery alone offers little to them; therefore, the help of X-ray and radium is tried. In very advanced cases very good palliative results have been shown.

The results in operable and early inoperable cases improved with the advent of the use of buried radium seeds in conjunction with the heavy external radiation and their combination with surgery; this goes hand in hand with considerable pain and distress to the patient, so that unless there is good hope of freeing the patient from the disease he should really not undergo the whole procedure, but receive a mild palliative treatment.

This refers to the treatment of epidermoid carcinoma. In lymphosarcoma or lymphogranuloma the lesion requires a less intensive treatment, so that in some of them we get along with external X-ray radiation alone.

The heavy radiation in carcinoma sometimes results in hemorrhages or even, as a late result, a necrosis of the jawbone.

Some cases with recurrent new growth still yield to X-ray radiation after they have been given intensive radium treatment, so that at least a trial should be made in every case. The results are good in cases of lymphosarcoma and malignant granuloma.

Cancer of the jaw is usually due to either chronic irritation or to poor fitting teeth plates, rough teeth or excessive smoking. Contrary to its frequency in causing lingual carcinoma, syphilis has little relation to it.

Unfortunately these lesions are considered to be of an inflammatory character for a long period of time and thus valuable time is lost.

There are two types of carcinoma of the jaw; they are either papillary or infiltrating epidermoid carcinomas.

The latter is the more malignant type. It invades soft parts and bone very early and causes metastasis when it is still inconspicuous in appearance. The other type produces a more bulky tumor and grows slowly. It disseminates very late. To distinguish between the two types is most necessary in order to adapt the treatment accordingly; therefore, a section for microscopic examination is necessary.

A direct use of radium on the bone is prohibited by the resulting necrosis and formation of sequestrum. The lesion in the bone therefore should be widely excised. The soft parts then can be cauterized with endothermy and radium and X-ray freely applied.

The proper way of treating seems to be to give the patient, first, a thorough radiation treatment externally; this will prevent the growth from becoming larger and help to make the following surgical procedure safer and easier. If a large supply of radium is on hand, an additional amount of external radiation can be given in conjunction to the Roentgen treatment.

If the case is too far advanced, only mild palliative treatment should be given and great relief can be expected even in far advanced cases. The neck in these cases always is treated with external Roentgen radiation.

Enlarged lymph nodes as long as they are movable should be treated conservatively, otherwise a unilateral dissection with a burying of radon seeds follows.

The preoperation radiation should be given preference as it offers the surgeon a certain amount of safety and by shrinking the growth might render the procedure easier.

If an operation is done it should be done as thoroughly as possible and should include all possibly affected bone and soft tissue. Here electrocoagulation offers a great advantage as it often shortens the healing period. During the operation, or shortly after, the condition should be attacked by thorough internal and external radium and X-ray radiation.

Although sarcoma usually responds much more readily than carcinoma, the danger of dissemination is so great that the patient frequently dies of distant metastasis. Only wide excision with the electrothermy method and vigorous radiation treatment will offer the patient a chance of recovery.

What has been said with reference to treatment of the lower jaw holds true in tumors of maxillary bone. The primary tumors are rare.

Cancer of the Antrum: More frequently we find that the growth originates from *paranasal sinus.*

The patient appears with an indurated swelling over the prominence of the cheek elevation, exophthalmos of the eye, or there is a fungating growth projecting downward inside of the cheek.

Unfortunately in most cases the lesions are masked by inflammatory processes covering the true nature of the case and, therefore, the patients come to our attention in a state when the growth has already perforated through the bone.

This mixed infection not only complicates the diagnosis of the case, but also adds to the difficulty of surgical and radiotherapeutical procedures.

The treatment is a very striking example of what close co-operation between the surgeon and radiotherapist can do. After an initial thorough course of external radiation, the growth is attacked surgically and the sinus widely opened, cleaned out with endothermy. Special attention should be given to get drainage in order to keep infection at a minimum. Radium is inserted in the cavity and a high dose of radiation given.

If the floor of the orbit is invaded the eyeball should be sacrificed in order to treat remote branches.

We must bear in mind that only the most radical procedures should be undertaken when treating such a lethal disease as cancer, and conservatism might bring the entire operation to a failure by recurrence.

Wide excision of the maxilla with removal of the floor and anterior wall and perhaps floor of the orbits will offer a good opportunity to insert a radium tube and treat the condition through distant

small amounts of radium. Heavily filtered and left over a longer period will give better results than large amounts over a shorter space of time. The total must, however, be a very heavy dose and strong reactions should not be feared.

Salivary Glands: The tumors originating from the *salivary glands* make up 1 per cent of the total of all malignancies. According to Ewing there are three types: benign adenoma and malignant adenoma, or carcinomas, and autochthonous mixed tumor.

Schreiner, of Buffalo, in speaking of treatment of these cases, comes to the conclusion that where the tumor is favorably located it should be removed or enucleation of the gland should be performed, leaving the sac. A thorough course of radiation should follow.

Where the tumor is not favorably located on account of injury to the facial nerve or inaccessibility to surgical procedure, radiation by implantation with gold seeds, together with X-ray, is advisable.

But in most of these cases it is impossible on account of the extension of the tumor to pay much attention to the facial nerve.

Recurrences should be treated with X-ray.

The results are not very encouraging. The cases respond well as long as they are primary, but as soon as they have spread there isn't much hope for the patient. It seems, however, that a good combination of radiotherapeutical measures and surgery do best.

Cancer of the Larynx: The many failures which have been accounted in the treatment of the *larynx* have given us most valuable lessons, not only in this particular disease, but in the general use of radium and X-ray.

Up to recently the massive doses of radium and X-ray over a short space of time have greatly interfered with the results. They have frequently even brought about a necrosis of the cartilage with its undesirable sequels.

Intrinsic carcinoma should be operated. The statistics show 85 per cent of good results. They may be still improved upon by postoperative radiation. Even cases with early involvement of the regional glands may be so treated after preoperative radiation.

Finzi and Harmer, of England, have recently described a conservative method with which they have treated 15 cases of primary cancer of the larynx with such results that six patients are free from recurrence for a period of from two to four and one-half years. Five patients died after one to two years, and two patients remained in improved condition.

After a thorough preoperative radiation they cut a large window in the thyroid cartilage, still leaving a frame of cartilage for support,

and thus gain access to the outer surface of the growth, which is still covered by the perichondrium. It is most important that this perichondrium is not disturbed and that the tumor is left uninjured. They now use needles of 1 m.gm. strength right next to the growth. By this they obtain a direct influence on the growth and do not have to fear any necrosis.

In case that the growth has reached over the median line another window is cut in the opposite side after an inferior tracheotomy is performed.

These needles are left *in situ* for four-and-a-half to eight days, according to the tumor and the severity of the case and inflammation.

By this procedure they have repaired the function of the vocal cords to such an extent that in some cases it was impossible for others to determine the site of the lesion.

As this method is still empiric it is impossible to estimate the value in comparison with the surgical results. Other methods are to insert a tube with radium for a certain length of time in the larynx or bury seeds in the growth.

It might be tried in cases where the patient prefers a high risk to the permanent loss of the voice.

In inoperable cases, after the disease has spread far beyond the larynx, the use of radiation therapy is advocated as it tends to arrest the disease for a period of time.

Cancer of the Esophagus: In the last few years surgery by more daring methods has been able to attack certain types of cancer of the esophagus with better results, especially when the malignancy is located in the pharyngeal portion. However, all the others, including that of the cardia, are inaccessible for surgical procedure.

A gastrostomy is done in all cases in order to put at rest the diseased part and to obtain better working facilities.

In these cases we have to rely entirely upon radium and X-ray The poor results which have been seen so far are due to the fact that the esophagus is a very thin-walled tube. It has hardly any connective tissue. Although sometimes the patient consults the phycian very early, the malignancy has already broken through the wall and has involved the neighboring structures. The results with radium alone have been very disappointing. It healed the ulcer superficially and opened the stenosis by breaking down the tumor, but the cancer progressed in the deeper structure as the dose of radium diminished too rapidly with the distance.

I have seen better results by giving X-ray doses alone, but I have not been able so far to obtain results lasting much longer than two years.

I expect better results by the combination method of X-ray and radium, inserting a small dose of radium very heavily filtered, which will permit the radium to stay in the esophagus for a number of days and give a better percentual depth dose that will allow me to send enough radiation to the distant tissue without caustic effect to the nearby tissue.

This comparatively slow treatment will also give the tissue a chance for reconstruction, to fill in the ulcer with normal tissue. Great care must be exercised in placing the radium tube in the proper position. It will not do to have the tube in the diverticulum alone above the stricture as it will not influence the growth very much.

Sometimes it is difficult on account of the tumor to enter the stricture; in these cases a gastrostomy must be performed and a bougie must be inserted from the cardia upward and a silk thread introduced and pulled through to the mouth. With both ends of the thread tied together the radium can be inserted from the gastrostomy opening through the cardia and can be properly located in the lesion and later pulled out through the mouth and then again inserted whenever necessary.

Nonmalignant Conditions: Let me mention only briefly that there is a large field of usefulness for X-ray and radium in the treatment of diseases other than malignancies in your line of practice.

First of all, treatments of tonsils might interest you. In the cases which have been referred to me for treatment of the tonsils, I have seen good uniform results on hypertrophied tonsils. I have also had good results in infected tonsils, but it is my standpoint that X-ray or radium treatment should only be taken when there is contraindication for surgical procedure.

An X-ray treatment over the spleen preceeding an operation by four hours will raise the coagulation point of *bleeders* considerably and make the operation a much safer procedure.

Cases of *nasal polyps* which bleed easily can also be influenced very favorably as a few cases I have been able to treat have shown.

A great deal of good has been derived from X-ray treatments in *acute* and *chronic inflammatory conditions* of the eye, ear, nose and throat.

The treatment of *cervical adenitis* was really the first field of usefulness in the early days of the X-ray therapy. I have seen surprisingly good results in *sinus catarrh* with diathermy and X-ray.

The reports on *acute* and *chronic mastoiditis* are also good. I do not want to say that with the treatment of these conditions we want to do away with operation. This would be most illogical, but, by giving, for instance, a mastoid case which makes very slow progress in healing, one or two X-ray treatments, you will be surprised to see how nicely these cases will improve.

I might mention another good field, and that is the treatment in *parotidic fistulas*. These postoperative conditions are most disagreeable to both the patient and the physician. By giving the patient a careful dose over the gland we paralyze the gland to stop functioning for a few weeks, thus giving the fistula a chance to heal. After three or four weeks have elapsed and the fistula is healed, the gland will again start functioning.

There are numerous lesions of *tuberculous conditions* yielding good results by X-ray and ultraviolet rays, but time has progressed too far to speak at length of this.

Conclusion: In conclusion, I wish to again emphasize the fact that radiotherapy is still in the empiric stage. There is no doubt that there is a defined influence of radiation on malignancy. Our methods are yet far from perfect. That we have many failures is not to the discredit of the agent and should not discourage its use. Let us, therefore, investigate and develop our methods as to how we can profit best by combining the surgical procedures with radiation. Let us estimate the value of radiation from the standpoint whether or not by adding it to the surgical procedure we can still improve on our results.

965 Broad Street.

THE RELATIVE POSITION OF THE DEEPER VESSELS OF THE NECK WITH THE END OF THE NEEDLE IN LOCAL ANSTHESIA AROUND THE FAUCIAL TONSIL.*†

DR. PHILIP S. STOUT, Philadelphia.

Ten years ago Dr. Moore, Dr. Lukens and the writer went to the Baugh Institute of Anatomy, Jefferson College, Philadelphia, to see what they could learn about the relationship of the vessels and the faucial tonsil. Dr. Shaeffer told them he was studying these relationships himself and showed them some startling dissections of the internal carotid forming an S-shaped curve just back of the tonsil. But from that day to this the writer was not just satisfied that the danger of injections was with the arteries, but more likely with the weaker-coated veins. Recently, with the co-operation of Dr. O. Batson, Department of Anatomy of the Graduate School of Medicine, University of Pennsylvania, the writer injected an iodized oil into the internal jugular vein, the internal carotid, and later the external carotid and the common carotid arteries, making front and side Roentgen ray views after each injection. The accompanying Roentgen ray pictures show how some of the hyperdermic needles approximate and in some instances pierce the internal jugular vein. We used the same needles we used on the living. This condition, no doubt, obtains in many persons and may account for the profound shock we sometimes encounter while injecting the local anesthesia for tonsillectomy. Can we tell when the end of the needle is in a vessel? As soon as we begin to push on the plunger, if there is no resistance, then the end of the needle is most likely in a vessel. The very best thing you can do is to stop at once and draw out the needle and you will sometimes find that considerable blood will flow from the opening where the needle had been and the shock and symptoms of procain (novocain) poisoning will be out of all proportion to the amount you had injected.

Shortly before Christmas, 1929, a young lady desired to have her tonsils removed. She was what one would consider a very good

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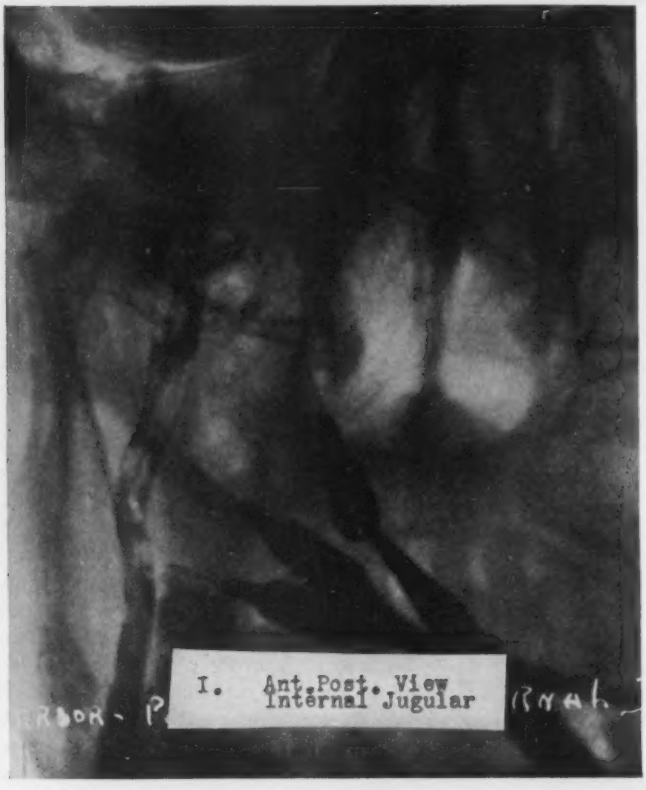
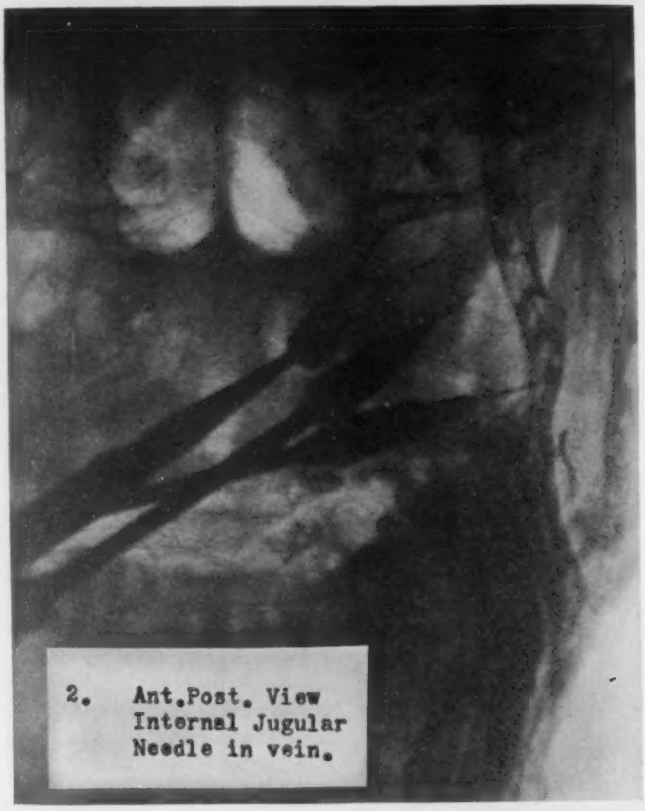
*Read before the Philadelphia Laryngological Society, March 9, 1930.
†Cadaver studies with iodized oil in vessels; Roentgen ray photographs.
Editor's Note: This ms. received in Laryngoscope Office and accepted for publication March 28, 1930.

risk, a teacher of physical education, having practically no pathology excepting chronic tonsillitis. On making the injection the first time the needle was inserted at the lower pole of the left faucial tonsil; the writer was startled at the ease with which the plunger moved within the carpule, there seemed to be no resistance such as normal



tissue would give to the flow of fluid. The needle was immediately withdrawn and about one teaspoonful of blood flowed from the opening caused by the needle. This blood was dark and clotted almost immediately. About 10 minims of 1 per cent procain fluid had been injected; although this was only a small amount. since we

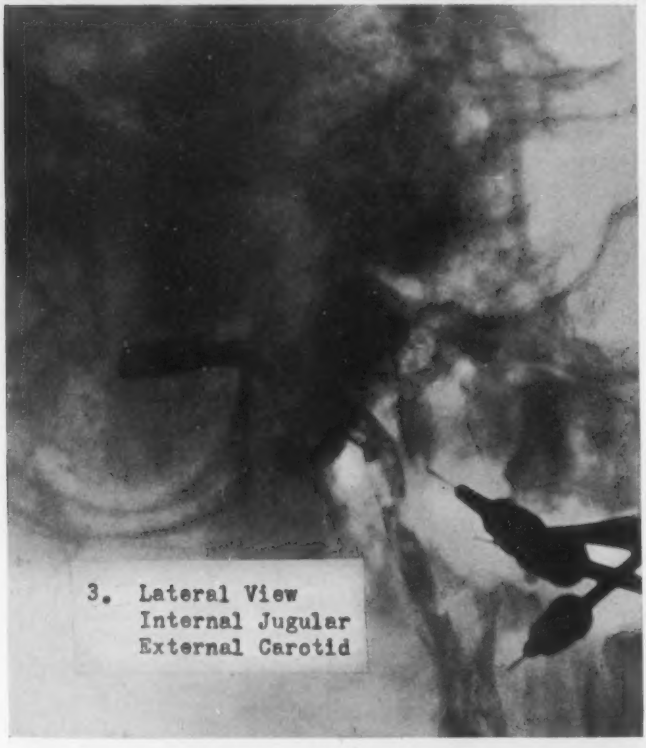
usually inject as much as 30 minims with each puncture. The patient went into shock and fainted; was revived, however, in a little while and he proceeded with the injection, but not in the same place nor did he inject the other side in the same place either. He had no more difficulty with bleeding and shock. After the tonsils



were removed a large blue vessel was found at the bottom of each tonsillar fossa. The needle used was the gold needle which is sold with the carpule syringe.

The three needles shown in the Roentgen ray pictures are the three types of needles we use in the various hospitals. The needle

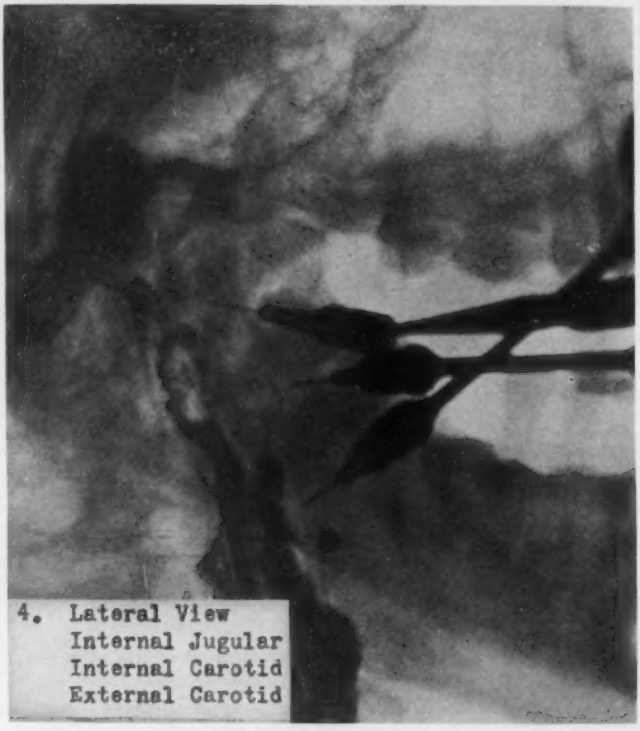
that is very sharp and spear-pointed is more likely to pierce the vessels than the round-pointed, slightly dull needle, although, of course, the sharp needle is slightly less painful as it pierces the mucous membrane. The veins are more easily punctured than the arteries. Cadaver studies correspond to experience in the living. You will notice that the Roentgen ray studies show that the vessels



are in contact with the end of the needle, which is in the lower part of the tonsil area. The needles in the middle and upper parts do not come so close to the vessels in any of the exposures made.

Summary: The large vessels of the neck are at times in close proximity to the tonsil. The average hyperdermic needle used for local anesthesia is sufficiently long to reach these vessels. Veins are

more liable to be pierced than arteries. Sharp spear-pointed needles enter the vessels more easily than the round-pointed ones. If there is no resistance when you begin to inject the local anesthesia, the likelihood is that the needle is within the vessel and you are injecting



the medicine directly into the bloodstream. This may account for some of the marked symptoms that sometimes follow the injections.

Further studies will be made and all the vessels, large and small, will be injected and the relationship to the end of the needle studied.

269 South 19th Street.

THE NEW YORK ACADEMY OF MEDICINE.

SECTION OF OTOLOGY.

Meeting of Dec. 13, 1929.

The Physiology and Clinical Examination of the Static Labyrinth. Dr. J. D. Whitham.

(To appear in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. E. M. JOSEPHSON: It seems impossible to conceive of experimental stimulation of any one part of the vestobular apparatus in man. It appears to be a mistaken concept to regard the macular apparatus as being alone stimulated when the body as a whole is turned on any axis; for there is always a rotary element or component of the force, involving stimulation of the cristae and the semicircular mechanism. It is only in movements involving displacement of the body in space in a sagittal or in an anterior posterior direction, that one can conceive of a pure macular stimulation. Consequently it is hard to conceive of position testing or vertigo and nystagmus, as generally executed, as being indicative of pure saccule and utricle function. Vertigo and nystagmus of position have been described, by myself and others, in connection with lesions of the central nervous system, basal meningitis of luetic or other origin, and tumors of the brain. Under the same circumstances, cerebral involvement, I have found that it is possible to elicit a head-position body-muscle reaction similar to that described in lower animals experimentally, *i. e.*, upon rotation of the head, these cases do past-point, whereas normal cases fail to do so.

In applying Quix's pointing sign, it is necessary to hold in mind a factor which has often been overlooked. I have pointed out as far back as 1924, in publications in THE LARYNGOSCOPE and the Annals, that in the human, as in lower animals, there is a summation of ocular, vestibular, deep sensory and other impulses involved in the kinesthetic function; and that it is possible to demonstrate the ocular factor by eliciting eye-body muscle reactions in cases in which the vestibular apparatus is intact. Indeed, I have found the reverse oculo-vestibular reactions to be the most delicate tests of vestibular function, helpful even when the other tests, such as the caloric and rotatory, which are in reality tests of response to gross irritation, fail to elicit any data of value. This test is an application of the von Graefe test used in the study of ocular palsies. In the normal individuals, one finds past-pointing, when the eyes are closed and rotated in the direction of the pointing arm, in the direction to which the eyes are turned; though the subjeuct points correctly when the position of the eyes is not altered in the course of the pointing test. This past-pointing on rotation of the eyes does not occuur when the vestibular apparatus is affected. In testing for pointing, by the method of Quix or by any other, it is for this reason highly important to take into consideration the position and movement of the eyes.

A word should be added with regard to direct application of findings of vestibular function in lower forms, as applied to man. The higher development of the nervous system in man has resulted in material alteration and subordination of function of various components, especially of vestibular function. Consequently, theoretic application of data on the function of the vestibule and its structures found true for lower forms will not apply with any accuracy to man.

DR. JOHN GUTTMAN: The paper read by Dr. Whitham was one of the most interesting ones we have heard in this Section pertaining to a subject of

which the majority of us know so very little. I remember having heard Magnus discuss this very subject, but as far as I know he did all of his experiments on animals. What I would like to know is whether Quix also drew his conclusions after experiments on animals or did he experiment on men? How did he produce the stimulation, and how could he separate the stimulation of the macula acustica of the utricle from that of the saccule? Were the clinical findings ever confirmed by postmortem findings? May the reactions following the so-called head movement test also be explained by the pressure of the otoliths upon the macula acustica?

DR. WHITHAM (closing): There is not much to add. Dr. Guttman asked if any work had been done on the living subject. A great deal has been done, and many of us have made such observations; we have noticed that our patients while sitting up would have nystagmus, but on lying down would not have it, etc.

DR. GUTTMAN: Where can you confirm it?

DR. WHITHAM: All these matters are difficult or impossible of confirmation. The same may be said of our knowledge regarding the physiology of the cochlea and of the semicircular canals.

The Clinical Pathology of Mastoiditis, with Special Reference to Bacteremia and Treatment by Blood Transfusions. Dr. Andrew A. Eggston.

(Published in full in June, 1930, issue.)

DISCUSSION.

DR. J. D. WHITHAM: I don't think I ever heard a more interesting or practical paper. I would like, however, to know what method of transfusion is being used, and whether Dr. Eggston has had any experience with bad results—whether severe reactions or death that he could attribute to the transfusion; also, I would like to know a little, very briefly, of his method of typing the pneumococucus organism.

DR. EGGSTON (closing discussion): The blood transfusions are given by a direct method and one I have devised in which there is a continuous flow of blood from donor to patient at the same time, permitting accurate measurement. It is important to master any technique used because better results and less reaction will be obtained. Much has been said for and against the different types of transfusion and we have used all of the methods, but now we exclusively use the technique that duplicates more normal the physiological and therefore decreases the reactions.

In reply to Dr. Whitham's question, the standard methods of typing the pneumococci and bloods are used.

DR. WOLFF FREUDENTHAL.

Dr. Wolff Freudenthal died of pneumonia, May 5, 1930, in New York City, at the age of 71 years. Dr. Freudenthal was born in Germany and graduated from the University of Frieburg, 1884. He came to the United States at the age of thirty. He was one of the foremost laryngologists of his time and served on the staffs of numerous hospitals in New York City. He was three times President of the German Social Scientific Society. His death marks the passing of one of the old-time bulwarks of laryngology. M. F.

International Digest of Current Otolaryngology.

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Burghi, in the Archivos Espanoles d'Pediatria, December, 1929, writes concerning acute digestive and internal disturbances in infants caused by latent otitis media. He states that the condition is more frequently met with and is more serious in artificially fed infants. The symptoms are similar to those observed in severe dyspepsia. Dehydration occurs and may be followed by acidosis. Treatment consists of bilateral paracentesis and bountiful fluids. The author advises an examination of the ears in every acute digestive disturbance with dehydration and acidosis.

Chilov, in the Zeitsch. f. H., N. u. O., 25:280, 1930, writes on the Mechanism of the Sympathetic Nervous System in Reflex Sneezing. He reports that he carried on very delicate experiments to prove that the irritation of the end branches of the trigeminal nerve could bring forth the reflex. The sympathetic nervous system, however, does have an influence, in that the relationship in the breathing center is close to the trigeminal nerve and apparently is a compensatory action with the trigeminal nerve. Kelemen.

A rather interesting contribution appears in the March, 1930, Archives of Otolaryngology on The Question of Post-Tonsillectomic Pulmonary Abscess. Dr. Pierson, Dr. Holman and Dr. Schall contribute articles on this subject and the symposium covers the medical, therapeutic and surgical, as well as bronchoscopic, aspects.

Fibbi, in Il Valsalva, No. 1, 1930, reports a fatal case of pemphigus of the throat which was characterized by simultaneous appearance of blotches on the skin and mucous membranes. The mucous membrane lesions rapidly ulcerated and became diffuse, whereas those on the skin remained localized. Lasagna.

M. D. Guttman, of Chicago, in the *Illinois State Medical Journal* of May, 1930, presents a very interesting article on The Determination of the Pathogenic Tonsil. The author has repeatedly been confronted with the common problem of having to decide whether or not a tonsil is pathogenic. Clinical experience seems to be the only guide, and Guttman in his effort to find some other criterion on this question evolved the following possibility: By gentle massage of the tonsils he found that certain cases developed an increased white blood count, while others showed a decreased count. In attempting to standardize the results of this maneuver he comes to the following conclusions: *a.* Massage of the empty fossae of tonsillectomized patients causes little or no change in the white count of the peripheral blood; *b.* hyperplastic tonsils when not accompanied by infection also cause a fall in the white count; *c.* massage of chronically infected tonsil causes a rise in white count, thus serving as a basis for a biologic reaction from which the pathogenic status of the tonsil in question may be determined. A healed out noninfective tonsil will not react in this manner. *d.* The test is contraindicative in the presence of an acute or subacute process in the tonsils or in a systemic disturbance that may be predicated upon a tonsillar infection.

H. Barth, in the Zeitsch. fur H., N., u. O., 25:369, 1930, presents two cases of melanotic tumor of the ear. One patient was a 65-year-old female, who had a dark, tumor-like swelling on the lower third of her halix about the size of a hazelnut. In another patient, a 47-year-old man, the external canal was completely blocked with dark gray granulations. The author states that in the treatment one must make an incision in the fluctuating parts and shrink down the growth with radium therapy. His first case turned out to be melanomasarcoma, and the second one, virulent melanoma which spread to the temporal bone. KELEMEN.

Gardner and Frazier, in the Archives of Neurology and Psychiatry, February, 1930, discuss bilateral acoustic neurofibromas. They describe a familia tree of five generations (217 members), in which bilateral deafness was transmitted as a Mendelian dominant character in 38 members of the family. Of the 38, 15 subsequently became blind. Some very interesting functional tests were performed and there was no evidence of von Recklinghausen's disease. They state that the results of their investigation indicate that acoustic tumors take their origin on the vestibular portion of the eighth nerve.

Lickint, in the Zeitsch. fur H., N. u. O., 25:312, 1930, reports on the influence of tobacco and tobacco smoke on the ear and vestibular apparatus. He states that tobacco smoke in the external canal tends to increase the formation of cerumen. Tobacco particles as well as bacteria may be carried through the Eustachian tube to the middle ear and set up a chronic middle ear catarrh; tobix neuritis of the acoustic nerve is a possible manifestation; nervous disturbances may apparently be caused by the use of nicotine (otalgia nerosa), as well as disturbances of the bone perception apparatus. These apparently are caused by the nicotine content of the adjoining blood vessels. Tobacco has been held to account for Meniere's disease, vestibular dizziness and vestibular nystagmus. This was confirmed by experiments of the author. KELEMEN.

Scuri, in Il Valsalva, No. 1, 1930, writes on the importance of conserving the epiglottis in laryngotomy. He claims that as much of the epiglottis as possible should be saved for the re-establishment of speech. He has obtained good clinical results with good speech by allowing the epiglottis to remain intact. LASAGNA.

Natwejew, in the Monatsch. fur Ohrenheilkunde, December, 1929, writes on the regeneration of the mucous membrane of the nose after surgical intervention. Based on his experiences, he claims that thermo- or electrocautery destroys the physiologic functions of the mucous membranes so that regeneration does not occur. Turbinectomy, however, allows healing with normal physiological function. He concludes that when the pathological process has not destroyed the glands of the erectile tissues of the nose, then turbinectomy is to be preferred rather than cauterization.

Sauter, in the Zeitsch. fur H., N., u. O., 25:325, 1930, writes on the practical function of testing the nasal spaces and comments on the physiology of the nose as a respiratory organ. He believes that the function of the nose should for a direct current of air which will coincide with the active and passive thoracic and abdominal respiratory reactions. He believes that the pulmonary capacity is dependent on various factors, among the important ones being the amount of energy expended in inhaling the quality of the inhaled air (moistness, temperature, etc.), and the amount of protection against foreign particles offered by the mucous membranes. It is easily understood how the physiology of breathing may be varied by pathology in the nasal spaces. KELEMEN.

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